# Box Series IP Camera

## User Manual

Release 2.1

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# Revision History

| Version | Description | Date |
|---|---|---|
| 1.0 | Initial release: All the box camera models are put into this manual; both hardware and software aspects are covered. | April 2012 |
| 1.1 | New model added. | June 2012 |
| 1.2 | New model added. | September 2012 |
| 1.3 | New model added. | February 2013 |
| 1.4 | New model added. | July 2013 |
| 1.5 | New features added. | July 2013 |
| 1.6 | UI Modified | Nov. 2013 |
| 1.7 | Add new controller icons | Dec. 2013 |
| 1.8 | New models added | Feb. 2014 |
| 1.9 | New models added | May 2014 |
| 2.0 | New models added | July 2014 |
| 2.1 | New models added | Sept. 2014 |

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# Safety Precautions

## Electric Shock Warning

This equipment may cause electric shocks if not handled properly.

- Access to this equipment should only be granted to trained operators and maintenance personnel who have been instructed of, and fully understand the possible hazardous conditions and the consequences of accessing non-field-serviceable units such as the power supplies.
- The system must be unplugged before moving, or that it becomes damaged.

## Reliable Grounding

Particular attention should be given to prepare reliable grounding for the power supply connection. It is suggested to use a direct connection to the branch circuit. Check for proper grounding before powering on the device.

## Overloading Protection

The device should be installed according to specifications. Provide a suitable power source with electrical overload protection. Do not overload the AC supply branch circuit that provides power to the device.

## ESD Precautions

Please observe all conventional anti-ESD methods while handling the device. The use of a grounded wrist strap and an anti-static work pad are recommended. Avoid dust and debris in your work area.

# Device Site Recommendations

The device should be installed according to specifications. This device should be operated at a site that is:

- Clean, dry, and free of excessive airborne particles.
- Well-ventilated and away from heat sources such as direct sunlight and radiators.
- Clear of vibration or physical shock.
- Away from strong electromagnetic fields produced by other devices.
- Available with properly grounded wall outlet for power. In regions where power sources are unstable, apply surge suppression.
- Available with sufficient space behind the device for cabling.

# Chapter 1. Product Overview

## 1.1. Network Camera Introduction

Box camera series are professional network cameras that use Internet Protocol (IP) to transmit video streams and control signals over networks. Capable of operating over both LANs and WANs, they provide a complete budget-conscious remote surveillance solution that are ultra clear and highly integrated. Box camera series combine a user-friendly interface and simplified installation with a powerful feature set to provide users an easy upgrade path to new digital surveillance system in a virtual environment. These highlights make box camera series ideal choices for environments that require remote surveillance or video transmission.

# 1.2. Features and Benefits

Box IP camera is a cutting-edge digital video transmission device. It can compress and transmit real-time images of outstanding quality using a reasonable amount of bandwidth through a standard TCP/IP network. The following features make this IP camera an outstanding choice when building an intelligent IP surveillance system:

- High Video Quality

  High image quality is essential in security surveillance applications. It is important to be able to clearly capture an incident in progress and identify persons or objects involved. A network camera gives exceptional video quality, even greater than that of traditional analog cameras, which means that more detail or larger areas can be covered.

- H.264/MPEG-4/MJPEG Compression

  Motion JPEG, MPEG-4, and H.264 (also known as MPEG-4 Part 10/AVC), each employ different techniques to reduce the amount of data transferred and stored in a network video system. Network cameras that support multiple compression standards are ideal for maximum flexibility and integration possibilities.

- Dual Streaming

  Dual-stream design enables simultaneous support of real-time video monitoring, video recording, or mobile viewing applications which require different resolutions, compression formats and frame rates.

- MicroSD/SDHC Card Slot

  IP surveillance relies on network connectivity, making it susceptible to attacks on the network between the camera and recording facilities. With onboard recording capability, our network cameras can truly be online 24/7. The microSD/SDHC card slot design ensures sufficient recording capacity for an over-weekend period even at full frame rate and high resolution.

- Tampering Detection

This is an intelligent video analytics application available only in selected network cameras in the market. When a camera is manipulated in any way (e.g. accidental redirection, blocking, defocusing, spray-painted, covered or damaged), it can automatically trigger recording and alert notifications.

- Power-over-Ethernet

The built-in Power-over-Ethernet support reduces cabling and installation costs, and enables users to consolidate power facilities for higher reliability. With PoE, a camera can still operate in the event of a power failure if it is connected to a centralized backup power with an Uninterruptible Power Supply.

Other detailed features include the following:

- Supports up to 10 simultaneous users.
- Built-in web server to allow real-time remote surveillance and control using standard web browsers.
- Built-in microSD card slot for local backup.
- Supports dynamic IP, LAN, and the Internet (ADSL, Cable modem).
- Supports most network protocols including: HTTP, TCP/IP, DNS, DHCP, RTSP, PPPoE.
- Supports 2-way audio.
- Automatically adapts image compression rate to available bandwidth.
- Supports image recording and still image capture.
- Provides Signal loss and motion-detection alerts (adjustable area and sensitivity level).
- Supports most PTZ camera protocols.
- Self-recovery feature automatically re-establishes broken network connections.

# 1.3. Technical Specifications

## Model List for Box Camera Series

| | |
|---|---|
| CAM2311SC | 2MP D/N Compact Network Camera |
| CAM2311 | 2MP H.264 D/N IP Camera with Individual ISP |
| CAM2331 | Full HD Low Light D/N IP Camera |
| CAM2331P | 2MP P-iris D/N IP Camera with Individual ISP |
| CAM2331SC | 2MP Low Light D/N Network Camera |
| CAM2331SP | 2MP P-iris Low Light D/N Network Camera |
| CAM2441 | 3MP HDR D/N IP Camera |
| CAM2441P | 3MP HDR P-iris D/N IP Camera |
| CAM2511 | 5MP WDR D/N IP Camera |
| CAM2511SC | 5MP WDR, ROI, PoE, Day/Night, Compact Network Camera |

## Specifications for CAM2311

| Model Name | **CAM2311** |
|---|---|
| Description | 2M H.264 D/N IP Camera with Individual ISP |
| Image Sensor | 1/2.7" 2 megapixel progressive scan CMOS |
| Lens | Changeable (CS/C mount) |
| SNR | 48dB |
| WDR | Yes |
| Day/Night ICR | Yes |
| IR LED | N/A |
| Min Illumination | 0.01 Lux @ F1.2 (B/W)<br>0.1 Lux @ F1.2 (Color) |
| Iris Control | DC drive |
| Viewing Angle | N/A |
| Camera Angle Adjustment | N/A |
| Pan/Tilt/Zoom Functionalities | N/A |
| Shutter Time | 1/30~1/50,000 s |
| Video Compression | H.264/MPEG-4/MJPEG |
| Resolution | Up to 1920 x 1080 |
| Video FPS | 25 fps at 1080P (1920 x 1080)<br>30 fps at SXGA (1280 x 1024)<br>30 fps at HD720 (1280 x 720)<br>30 fps at D1 (720 x 480)<br>30 fps at VGA (640 x 480)<br>30 fps at QVGA (320 x 240) |
| Video Control | AGC (Auto Gain Control),<br>AWB (Auto White Balance),<br>AES (Auto Electronic Shutter),<br>BLC (Back Light Compensation),<br>HLC (High Light Compensation),<br>3D Noise Reduction,<br>DEFOG,<br>Image Adjustment |
| Video Stream | Dual stream at H.264, MPEG-4, and MJPEG simultaneously |
| Bit Rate | 64K ~ 10Mbps, VBR, CBR, controller frame rate and quality |
| Intelligent Video | Motion Detection,<br>Tampering Detection<br>(blocked, redirected, defocused, or spray-painted) |
| Video Jack | Yes (BNC) |
| Audio | 2 Way Audio |
| Audio Compression | 32KHz, ADPCM |
| Audio Input/Output | 3.5mm phone jack |
| Alarm In/Out | 1/1, terminal block |

| | |
|---|---|
| Video Buffer | 5 second pre-alarm,<br>30 second post-alarm |
| Event Action | Send snapshot or video clip by FTP or email, record to NAS,<br>record to local storage, trigger DO |
| Supported Protocols | IPv4, ARP, TCP, UDP, ICMP, DHCP, NTP, DDNS, SMTP, FTP, HTTP,<br>CIFS, PPPoE, UPnP, RTP, RTSP, RTCP, 3GPP, ONVIF |
| Ethernet | 10/100 Base-T / RJ45 |
| Local Storage | microSD/SDHC slot x 1 (Class2/Class 4/Class 6) |
| RS-485 | 1 (2 pins on terminal block) |
| USB | N/A |
| SDK | SDK 2.0 |
| OS | Microsoft Windows XP/Vista/7 |
| Browser | Microsoft IE 6.0 or above |
| Software | VMS 2.4.7 |
| Temperature | Operation: -10~50°C (14~122°F)<br>Storage: -30~60°C (-22~140°F) |
| Humidity | 5 to 90% |
| Power | 12VDC 1.5A；PoE (IEEE 802.3af) with Class 3 |
| Power Consumption | Max. 7W without AUX Power |
| Dimension | 74.95mm x 59.3mm x 153.5mm (2.95" x 2.34" x 6.04") |
| Weight | Net: 435g (0.96 lb)<br>Gross: 1085g (2.4 lb) |
| Certification | Safety: LVD<br>EMC: FCC, CE, GOST, KCC |

# Specifications for CAM2311SC/2511SC

| Model Name | **CAM2311SC** | **CAM2511SC** |
|---|---|---|
| Description | 2M D/N Compact Network Camera with Individual ISP | 5 Megapixel Day&Night Compact Network Camera |
| Image Sensor | 1/2.8” 2 megapixel SONY Exmor CMOS | 1/2.5” 5 megapixel progressive scan CMOS |
| Lens | Changeable (CS/C mount) | |
| SNR | 48dB | |
| WDR | Yes | |
| Day/Night ICR | Yes | |
| IR LED | N/A | |
| Min Illumination | 0.01 Lux @ F1.2 (B/W)<br>0.1 Lux @ F1.2 (Color) | |
| Iris Control | DC drive | |
| Viewing Angle | N/A | |
| Camera Angle Adjustment | N/A | |
| Pan/Tilt/Zoom Functionalities | N/A | |
| Shutter Time | 1/1~1/1,000,000 s | |
| Video Compression | H.264/MPEG-4/MJPEG | |
| Resolution | Up to 1920 x 1080 | Up to 2560 x 1920 |
| Video FPS | 30 fps at 1080P (1920 x 1080)<br>30 fps at SXGA (1280 x 1024)<br>30 fps at HD720 (1280 x 720)<br>30 fps at D1 (720 x 480)<br>30 fps at VGA (640 x 480)<br>30 fps at QVGA (320 x 240) | 12 fps at QSXGA (2560 x 1920)<br>20 fps at QXGA (2048 x 1536)<br>30 fps at 1080P (1920 x 1080)<br>30 fps at SXGA (1280 x 1024)<br>30 fps at 720P (1280 x 720)<br>30 fps at D1 (720 x 480)<br>30 fps at VGA (640 x 480)<br>30 fps at QVGA (320 x 240) |
| Video Control | AGC (Auto Gain Control),<br>AWB (Auto White Balance),<br>AES (Auto Electronic Shutter),<br>Luminance Control,<br>WDR,<br>2D/3D De-noise,<br>ROI, Edge Enhancement,<br>Lens Correction,<br>Image Adjustment | |
| Video Stream | Dual stream at H.264, MPEG-4, and MJPEG simultaneously | |
| Bit Rate | 64K ~ 10Mbps, VBR, CBR, controller frame rate and quality | |
| Intelligent Video | Motion Detection,<br>Tampering Detection<br>(blocked, redirected, defocused, or spray-painted) | |
| Video Jack | N/A | |
| Audio | 2 Way Audio | |

| | |
|---|---|
| Audio Compression | 16KHz, ADPCM/G.711 |
| Audio Input/Output | 3.5mm phone jack |
| Alarm In/Out | 1/1, terminal block |
| Video Buffer | 5 second pre-alarm,<br>30 second post-alarm |
| Event Action | Send snapshot or video clip by FTP or email, record to NAS, record to local storage, trigger DO |
| Supported Protocols | IPv4, ARP, TCP, UDP, ICMP, DHCP, NTP, DDNS, SMTP, FTP, HTTP, CIFS, PPPoE, UPnP, RTP, RTSP, RTCP, 3GPP, ONVIF |
| Ethernet | 10/100 Base-T / RJ45 |
| Local Storage | microSD/SDHC slot x 1 (Class 4/Class 6) |
| RS-485 | N/A |
| USB | N/A |
| SDK | SDK 2.0 |
| OS | Microsoft Windows XP/Vista/7 |
| Browser | Microsoft IE 6.0 or above |
| Software | VMS 2.6 |
| Temperature | Operation: -10~50°C (14~122°F)<br>Storage: -30~60°C (-22~140°F) |
| Humidity | 5 to 90% |
| Power | PoE (IEEE 802.3af) with Class 3 |
| Power Consumption | Max. 5W without AUX Power |
| Dimension | 64mm x 60mm x 97mm (2.52" x 2.36" x 3.82") |
| Weight | Net: 275g<br>Gross: 530g |
| Certification | Safety: LVD<br>EMC: FCC, CE |

## Specifications for CAM2331/2331P

| Model Name | **CAM2331** | **CAM2331P** |
|---|---|---|
| Description | 2M H.264 D/N IP Camera with Individual ISP | |
| Image Sensor | 1/2.8" 2 megapixel SONY Exmor CMOS | |
| Lens | 3.1-8mm P-Iris Lens, F1.2<br>(CS mount) | |
| SNR | 48dB | |
| WDR | Yes | |
| Day/Night ICR | Yes | |
| IR LED | N/A | |
| Min Illumination | 0.01 Lux @ F1.2 (B/W)<br>0.1 Lux @ F1.2 (Color) | |
| Iris Control | DC Drive | P-Iris |
| Viewing Angle | Diagonal: 123.1° - 48.3°<br>Horizontal: 105.4° - 42.2°<br>Vertical: 57.9° - 23.8° | |
| Camera Angle Adjustment | N/A | |
| Pan/Tilt/Zoom Functionalities | N/A | |
| Shutter Time | 1/30~1/50,000 s | |
| Video Compression | H.264/MPEG-4/MJPEG | |
| Resolution | Up to 1920 x 1080 | |
| Video FPS | 25 fps at 1080P (1920 x 1080)<br>30 fps at SXGA (1280 x 1024)<br>30 fps at HD720 (1280 x 720)<br>30 fps at D1 (720 x 480)<br>30 fps at VGA (640 x 480)<br>30 fps at QVGA (320 x 240) | |
| Video Control | AGC (Auto Gain Control),<br>AWB (Auto White Balance),<br>AES (Auto Electronic Shutter),<br>BLC (Back Light Compensation),<br>HLC (High Light Compensation),<br>3D Noise Reduction,<br>DEFOG,<br>Image Adjustment | |
| Video Stream | Dual stream at H.264, MPEG-4, and MJPEG simultaneously | |
| Bit Rate | 64K ~ 10Mbps, VBR, CBR, controller frame rate and quality | |
| Intelligent Video | Motion Detection,<br>Tampering Detection<br>(blocked, redirected, defocused, or spray-painted) | |
| Video Jack | Yes (BNC) | |
| Audio | 2 Way Audio | |
| Audio Compression | 32KHz, ADPCM | |

| | |
|---|---|
| Audio Input/Output | 3.5mm phone jack |
| Alarm In/Out | 1/1, terminal block |
| Video Buffer | 5 second pre-alarm,<br>30 second post-alarm |
| Event Action | Send snapshot or video clip by FTP or email, record to NAS,<br>record to local storage, trigger DO |
| Supported Protocols | IPv4, ARP, TCP, UDP, ICMP, DHCP, NTP, DDNS, SMTP, FTP, HTTP,<br>CIFS, PPPoE, UPnP, RTP, RTSP, RTCP, 3GPP, ONVIF |
| Ethernet | 10/100 Base-T / RJ45 |
| Local Storage | microSD/SDHC slot x 1 (Class2/Class 4/Class 6) |
| RS-485 | 1 (2 pins on terminal block) |
| USB | N/A |
| SDK | SDK 2.0 |
| OS | Microsoft Windows XP/Vista/7 |
| Browser | Microsoft IE 6.0 or above |
| Software | VMS 2.4.7 |
| Temperature | Operation: -10~50°C (14~122°F)<br>Storage: -30~60°C (-22~140°F) |
| Humidity | 5 to 90% |
| Power | 12VDC 1.5A；PoE (IEEE 802.3af) with Class 3 |
| Power Consumption | Max. 7W without AUX Power |
| Dimension | 74.95mm x 59.3mm x 153.5mm (2.95" x 2.34" x 6.04") |
| Weight | Net: 435g (0.96 lb)<br>Gross: 1085g (2.4 lb) |
| Certification | Safety: LVD<br>EMC: FCC, CE, GOST, KCC |

## Specifications for CAM2331SC/2331SP

| Model Name | **CAM2331SC** | **CAM2331SP** |
|---|---|---|
| Description | 2M Low Light D/N IP Camera | |
| Image Sensor | 1/2.8" 2 megapixel SONY Exmor CMOS | |
| Lens | Changeable (CS/C mount) | 3-10.5mm P-Iris Lens, F1.4<br>(CS mount) |
| SNR | 50dB | |
| WDR | Yes | |
| Day/Night ICR | Yes | |
| IR LED | N/A | |
| Min Illumination | 0.005 Lux @ F1.2 (B/W)<br>0.05 Lux @ F1.2 (Color) | |
| Iris Control | DC Drive | P-Iris |
| Viewing Angle | Horizontal: 100° - 30° | |
| Camera Angle Adjustment | N/A | |
| Pan/Tilt/Zoom Functionalities | N/A | |
| Shutter Time | 1/1~1/1000,000 s | |
| Video Compression | H.264/MPEG-4/MJPEG | |
| Resolution | Up to 1920 x 1080 | |
| Video FPS | 30 fps at 1080P (1920 x 1080)<br>30 fps at SXGA (1280 x 1024)<br>30 fps at HD720 (1280 x 720)<br>30 fps at D1 (720 x 480)<br>30 fps at VGA (640 x 480)<br>30 fps at QVGA (320 x 240) | |
| Video Control | AGC (Auto Gain Control)<br>AWB (Auto White Balance)<br>AES (Auto Electronic Shutter)<br>Luminance Control<br>WDR<br>2D/3D De-noise<br>ROI<br>Edge Enhancement<br>Lens Correction<br>Image Adjustment | |
| Video Stream | Dual stream at H.264, MPEG-4, and MJPEG simultaneously | |
| Bit Rate | 64K ~ 10Mbps, VBR, CBR, controller frame rate and quality | |
| Intelligent Video | Motion Detection,<br>Tampering Detection<br>(blocked, redirected, defocused, or spray-painted) | |
| Video Jack | Yes (BNC) | |
| Audio | 2 Way Audio | |

| | |
|---|---|
| Audio Compression | 16KHz, ADPCM/G.711 |
| Audio Input/Output | 3.5mm phone jack |
| Alarm In/Out | 1/1, terminal block |
| Video Buffer | 5 second pre-alarm,<br>30 second post-alarm |
| Event Action | Send snapshot or video clip by FTP or email, record to NAS,<br>record to local storage, trigger DO |
| Supported Protocols | IPv4, IPv6, ARP, TCP, UDP, ICMP, IGMP, DHCP,<br>NTP,DDNS, SMTP, SNMP, FTP, HTTP, HTTPS,<br>CIFS, PPPoE,UPnP, RTP, RTSP, RTCP, 3GPP, ONVIF |
| Ethernet | 10/100 Base-T / RJ45 |
| Local Storage | microSD/SDHC slot x 1 (Class2/Class 4/Class 6) |
| RS-485 | 1 (2 pins on terminal block) |
| USB | N/A |
| SDK | SDK 2.0 |
| OS | Microsoft Windows XP/Vista/7 |
| Browser | Microsoft IE 6.0 or above |
| Software | VMS 26 |
| Temperature | Operation: -10~50°C (14~122°F)<br>Storage: -30~60°C (-22~140°F) |
| Humidity | 5 to 90% |
| Power | 12VDC 1.5A；PoE (IEEE 802.3af) with Class 3 |
| Power Consumption | Max. 7W without AUX Power |
| Dimension | 74.95mm x 59.3mm x 153.5mm (2.95" x 2.34" x 6.04") |
| Weight | Net: 435g (0.96 lb)<br>Gross: 1085g (2.4 lb) |
| Certification | Safety: LVD<br>EMC: FCC, CE, GOST, KCC |

# Specifications for CAM2441/2441P

| Model Name | **CAM2441** | **CAM2441P** |
|---|---|---|
| Description | 3M HDR D/N IP Camera | |
| Image Sensor | 1/3" 3 megapixel progressive scan CMOS | |
| Lens | Changeable (CS/C mount) | |
| SNR | 48dB | |
| WDR | Yes (HDR, 110 dB) | |
| Day/Night ICR | Yes | |
| IR LED | N/A | |
| Min Illumination | 0.01 Lux @ F1.2 (B/W)<br>0.1 Lux @ F1.2 (Color) | |
| Iris Control | DC drive | P-Iris |
| Viewing Angle | N/A | |
| Camera Angle Adjustment | N/A | |
| Pan/Tilt/Zoom Functionalities | N/A | |
| Shutter Time | 1/2 ~ 1/1,000,000 s | |
| Video Compression | H.264/MPEG-4/MJPEG | |
| Resolution | Up to 2048 x 1536 | |
| Video FPS | 30 fps at QXGA (2048 x 1536)<br>60 fps at 1080P (1920 x 1080)<br>60 fps at SXGA (1280 x 1024)<br>60 fps at 720P (1280 x 720)<br>60 fps at D1 (720 x 480)<br>60 fps at VGA (640 x 480)<br>60 fps at QVGA (320 x 240) | |
| Video Control | AGC (Auto Gain Control),<br>AWB (Auto White Balance),<br>AES (Auto Electronic Shutter),<br>3D Noise Reduction,<br>Image Adjustment | |
| Video Stream | Dual stream at H.264, MPEG-4, and MJPEG simultaneously | |
| Bit Rate | 64K ~ 20Mbps, VBR, CBR, controller frame rate and quality | |
| Intelligent Video | Motion Detection,<br>Tampering Detection<br>(blocked, redirected, defocused, or spray-painted) | |
| Video Jack | Yes (BNC) | |
| Audio | 2 Way Audio | |
| Audio Compression | 16KHz, ADPCM/G.711 | |
| Audio Input/Output | 3.5mm phone jack | |
| Alarm In/Out | 1/1, terminal block | |
| Video Buffer | 5 second pre-alarm, 30 second post-alarm | |

| | |
|---|---|
| Event Action | Send snapshot or video clip by FTP or email, record to NAS, record to local storage, trigger DO |
| Supported Protocols | IPv4, ARP, TCP, UDP, ICMP, DHCP, NTP, DDNS, SMTP, FTP, HTTP, CIFS, PPPoE, UPnP, RTP, RTSP, RTCP, 3GPP, ONVIF |
| Ethernet | 10/100 Base-T / RJ45 |
| Local Storage | microSD/SDHC x 1 (Class2 / Class 4 / Class 6) |
| RS-485 | 1 (2 pin on terminal block) |
| USB | N/A |
| SDK | SDK 2.0 |
| OS | Microsoft Windows XP/Vista/7 |
| Browser | Microsoft IE 6.0 or above |
| Software | VMS 2.4.8 |
| Temperature | Operation: -10~50°C (14~122°F)<br>Storage: -30~60°C (-22~140°F) |
| Humidity | 5 to 90% |
| Power | 12VDC 1.5A;PoE (IEEE 802.3af ) with Class 3 |
| Power Consumption | Max. 7W |
| Dimension | 74.95mm x 59.3mm x 153.5mm<br>(2.95" x 2.34" x 6.04") |
| Weight | Net: 435g (0.96 lb)<br>Gross: 1085g (2.4 lb) |
| Certification | Safety: LVD<br>EMC: FCC, CE, GOST |

## Specifications for CAM2511

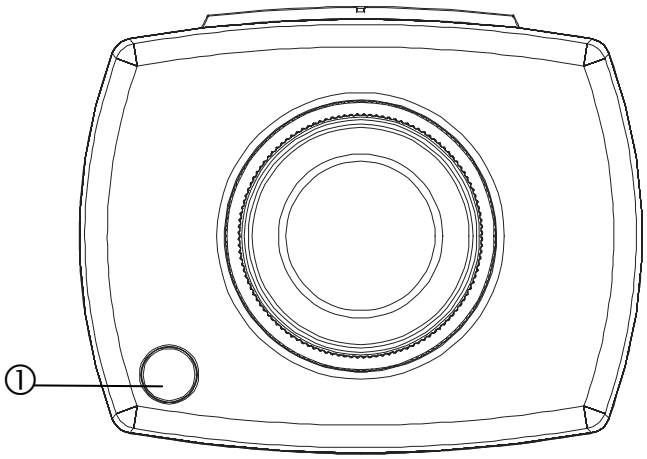
| Model Name | **CAM2511** |
|---|---|
| Description | 5M WDR D/N IP Camera |
| Image Sensor | 1/2.5" 5 megapixel progressive scan CMOS |
| Lens | Changeable (CS/C mount) |
| SNR | 48dB |
| WDR | Yes |
| Day/Night ICR | Yes |
| IR LED | N/A |
| Min Illumination | 0.01 Lux @ F1.2 (B/W)<br>0.1 Lux @ F1.2 (Color) |
| Iris Control | DC drive |
| Viewing Angle | N/A |
| Camera Angle Adjustment | N/A |
| Pan/Tilt/Zoom Functionalities | N/A |
| Shutter Time | 1/2 ~ 1/100,000 s |
| Video Compression | H.264/MPEG-4/MJPEG |
| Resolution | Up to 2560 x 1920 |
| Video FPS | 14 fps at QSXGA (2560 x 1920)<br>21 fps at QXGA (2048 x 1536)<br>30 fps at 1080P (1920 x 1080)<br>30 fps at SXGA (1280 x 1024)<br>30 fps at 720P (1280 x 720)<br>30 fps at D1 (720 x 480)<br>30 fps at VGA (640 x 480)<br>30 fps at QVGA (320 x 240) |
| Video Control | AGC (Auto Gain Control),<br>AWB (Auto White Balance),<br>AES (Auto Electronic Shutter),<br>Image Adjustment |
| Video Stream | Dual stream at H.264, MPEG-4, and MJPEG simultaneously |
| Bit Rate | 64K ~ 10Mbps, VBR, CBR, controller frame rate and quality |
| Intelligent Video | Motion detection,<br>Tampering Detection<br>(blocked, redirected, defocused, or spray-painted) |
| Video Jack | Yes (BNC) |
| Audio | 2 Way Audio |
| Audio Compression | 32KHz, ADPCM |
| Audio Input/Output | 3.5mm phone jack |
| Alarm In/Out | 1/1, terminal block |
| Video Buffer | 5 second pre-alarm, 30 second post-alarm |

| | |
|---|---|
| Event Action | Send snapshot or video clip by FTP or email, record to NAS, record to local storage, trigger DO |
| Supported Protocols | IPv4, ARP, TCP, UDP, ICMP, DHCP, NTP, DDNS, SMTP, FTP, HTTP, CIFS, PPPoE, UPnP, RTP, RTSP, RTCP, 3GPP, ONVIF |
| Ethernet | 10/100 Base-T / RJ45 |
| Local Storage | microSD/SDHC x 1 (Class2/Class 4/Class 6) |
| RS-485 | 1 (2 pin on terminal block) |
| USB | N/A |
| SDK | SDK 2.0 |
| OS | Microsoft Windows XP/Vista/7 |
| Browser | Microsoft IE 6.0 or above |
| Software | VMS 2.4.8 |
| Temperature | Operation: -10~50°C (14~122°F)<br>Storage: -30~60°C (-22~140°F) |
| Humidity | 5 to 90% |
| Power | 12VDC 1.5A;PoE (IEEE 802.3af ) with Class 3 |
| Power Consumption | Max. 7W |
| Dimension | 74.95mm x 59.3mm x 153.5mm<br>(2.95" x 2.34" x 6.04") |
| Weight | Net: 435g (0.96 lb)<br>Gross: 1085g (2.4 lb) |
| Certification | Safety: LVD<br>EMC: FCC, CE, GOST |

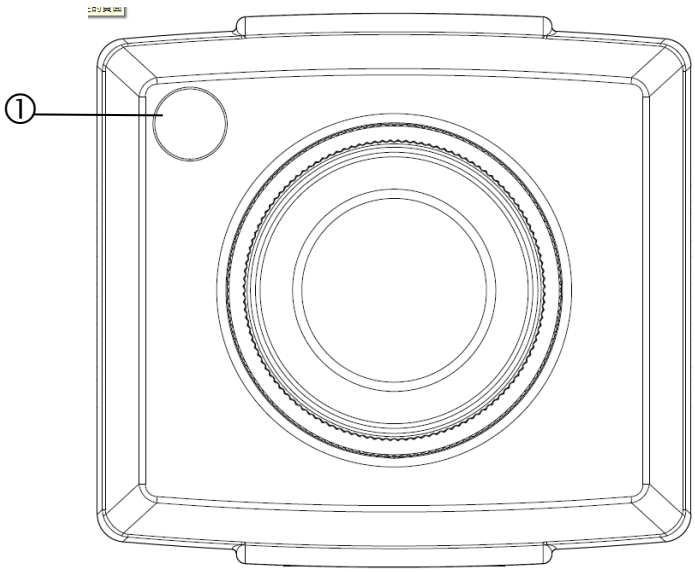
# Chapter 2. Hardware Overview

## 2.1. Overview

### Front View of CAM2xxx Series

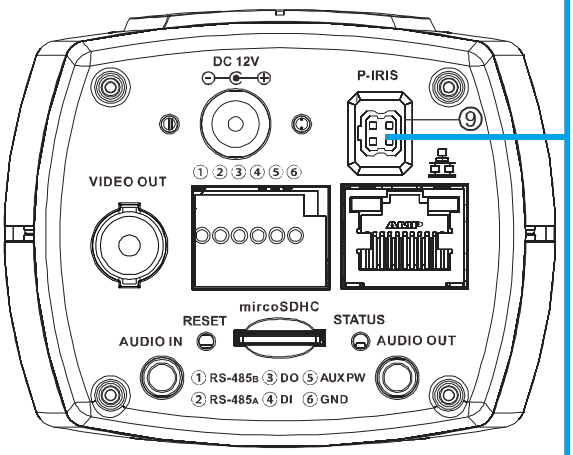


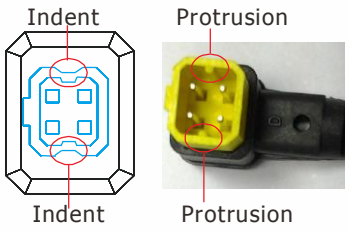

### Front View of CAM2311SC/2511SC




**1. Light Sensor**

## Rear View of CAM2331P/2331SP

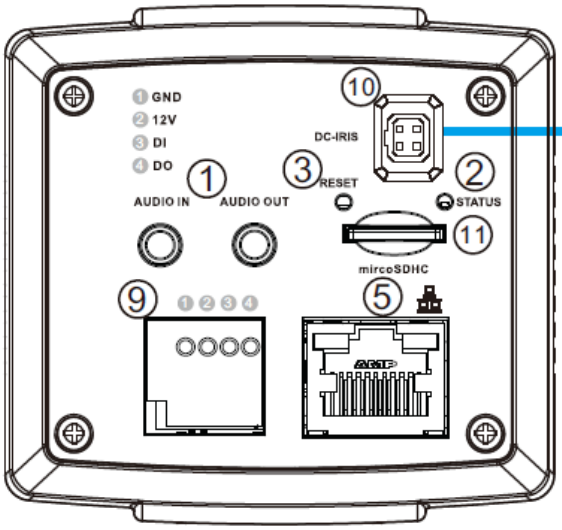


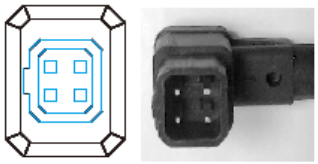




**Warning**

As shown above, the P-IRIS - Yellow DC power plug with protrusions must be matched to the correct camera with corresponding DC plug with indents.
If matched incorrectly, irreversible damages may occur!

## Rear View of CAM2311SC/2511SC/2331SC



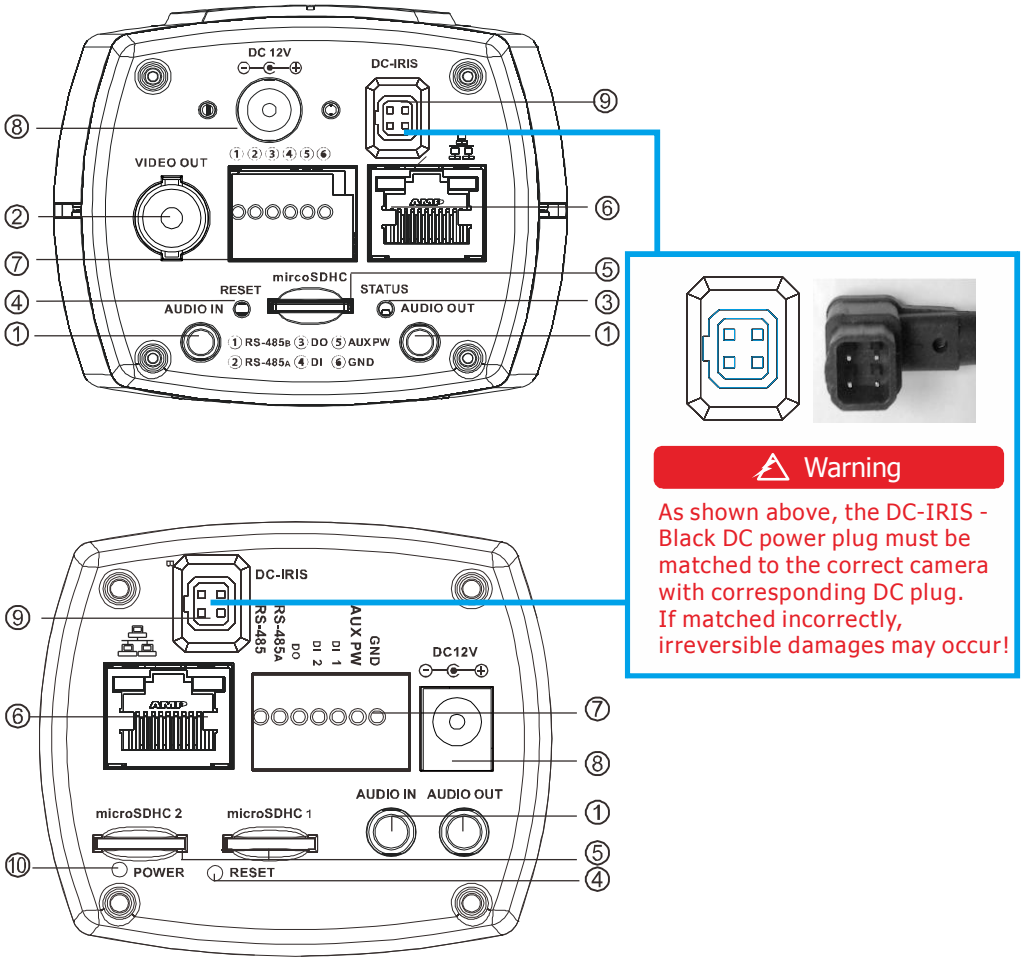



**Warning**

As shown above, the DC-IRIS - Black DC power plug must be matched to the correct camera with corresponding DC plug.
If matched incorrectly, irreversible damages may occur!

① Audio In/Out
② Status LED Indicator
③ Reset Button
④ USB Connector
⑤ Network Connector
⑥ Power Connector
⑦ IR LED
⑧ Light Sensor
⑨ I/O Terminal Connector
⑩ DC-Iris Connector
⑪ MicroSD/SDHC Card Slot

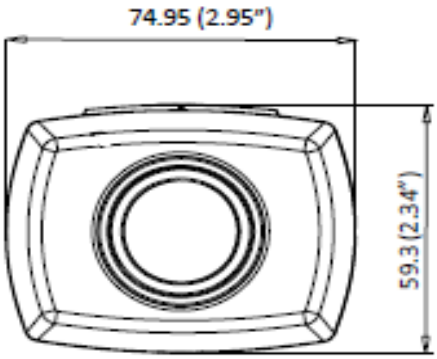
## Rear View of CAM2311/2331/2441/2511

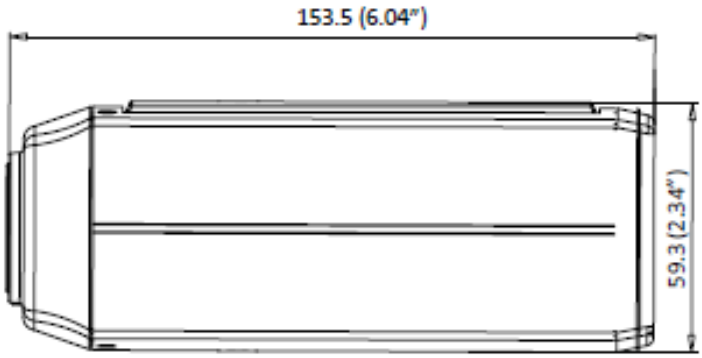


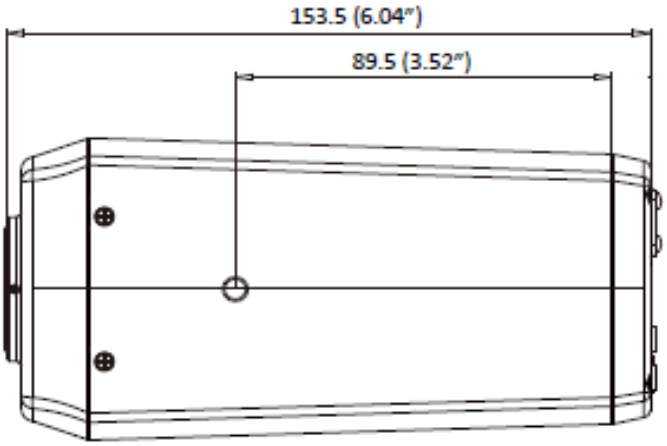

| | | |
|---|---|---|
| 1. Audio In/Out Connector | 2. Video Out Connector | 3. Status LED Indicator |
| 4. Reset Button | 5.MicroSD/SDHC Card Slot | 6. Network Connector |
| 7. I/O Terminal Connector | 8. Power Connector | 9. DC-Iris Connector |
| 9.P-Iris Connector | 10. Power Indicator | |

# 2.2. Dimensions

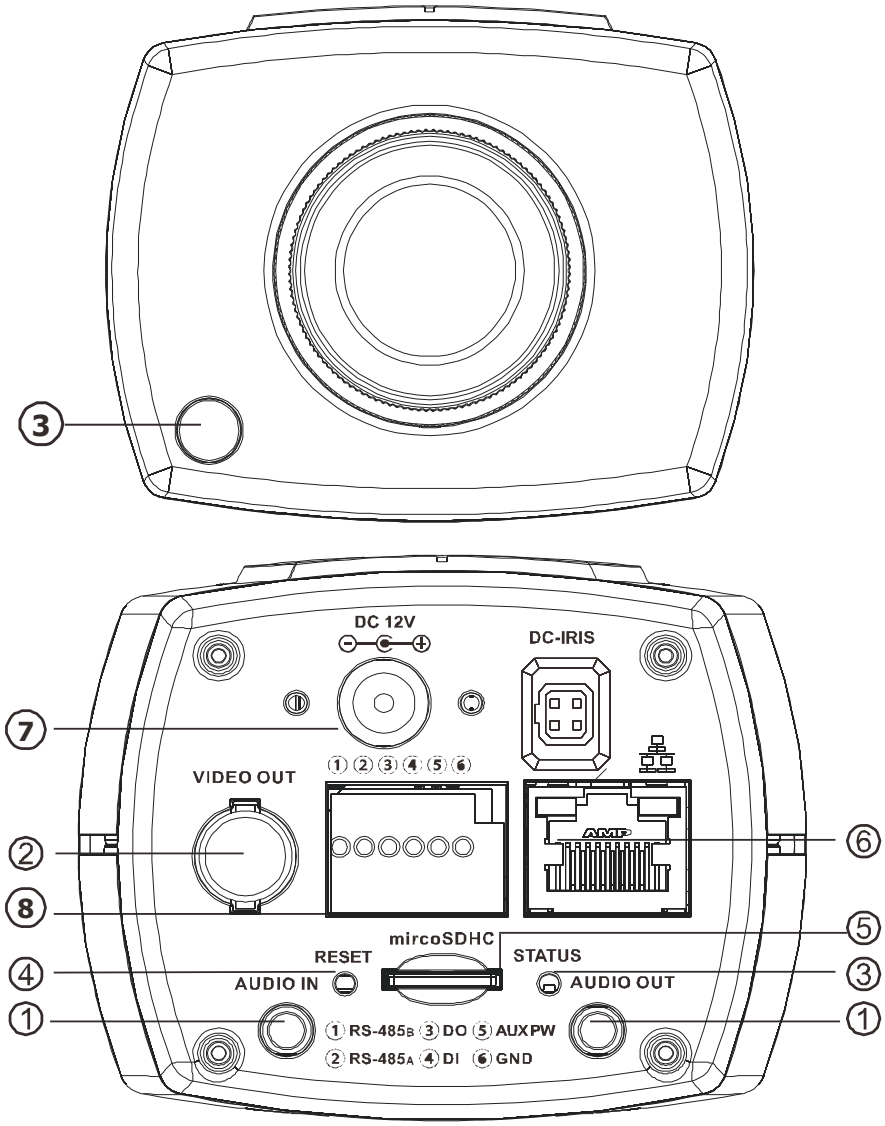
Unit: mm (inches)



# 2.3. Functions



1. Audio In/Out Connector

Audio In/Out are both for 3.5mm jacks. Audio-in provides for an external mono microphone. Audio out can be connected to a public address system or an active speaker with a built-in amplifier. A pair of headphones can also be attached.

2. Video Out Connector

3. Light Sensor

The model with light sensor can detect the light level and determine when it requires a switch between Day Mode and Night Mode.

**Note:** Please refer to *Image Appearance Settings* Section for more details.

4. Reset Button

Pressing the reset button will restore the camera to its factory default settings, as described in *Resetting to the Factory Default Settings*.

5. MicroSD/SDHC Card Slot

The microSD/SDHC card slot can be used for local recording and firmware upgrade.

**Note:** Apacer 4GB Class 6/Transcend 8GB Class 6/Kingston 16GB Class 2, SanDisk 16GB Class 2/SanDisk 32GB Class 4 MicroSDHC card are recommended, since they have passed the SD Card QVL (Qualified Vender List) test.

6. Network connector

The camera connects to the network via a standard RJ-45 network connector. The camera detects the speed of the local network (10/100BaseT). The camera also supports PoE (Power-over-Ethernet), and can be powered directly through the network cable.

7. Power Connector

The power connector is provided for solutions without PoE.

8. I/O Terminal Connector

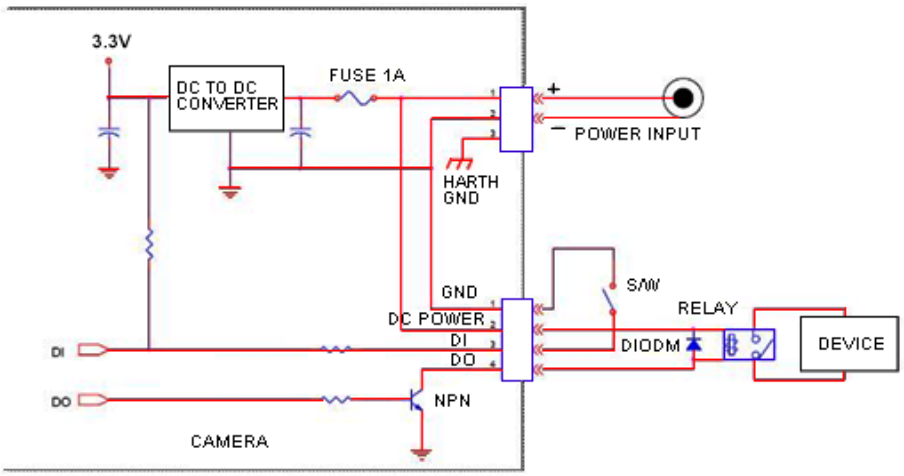
The I/O terminal connector provides an RS-485 interface, one transistor output, two digital inputs, and connection points for auxiliary DC power and GND.

The I/O terminal connector provides the interface to:

- 1 transistor output - For connecting external devices such as relays and LEDs. Devices can be activated by Output buttons on the Live View page or by an Event. The output will show as active (in Event Configuration > Port Status) if the alarm device is activated.
- 2 digital inputs - An alarm input for connecting devices that can toggle between an open and closed circuit, for use with devices such as PIRs, door/window contacts, glass break detectors, etc. When a signal is received the state changes and the input becomes active (shown under Event Configuration > Port Status).
- Auxiliary Power and GND

| GND | Pin 1 | Ground | Description |
|---|---|---|---|
| 12V Auxiliary DC Power (not to power this camera) | Pin 2 | Electrically connected in parallel with the connector for the power supply, this pin provides an auxiliary connector for main power to the unit. This pin can also be used to power auxiliary equipment with a maximum current of 100mA. | Voltage: 12V DC, Max: 1.2W |
| DI1(Digital Input) | Pin 3 | Connect to GND to activate, or leave floating (or unconnected) to deactivate. | Must not be exposed to voltages greater than 30V DC |

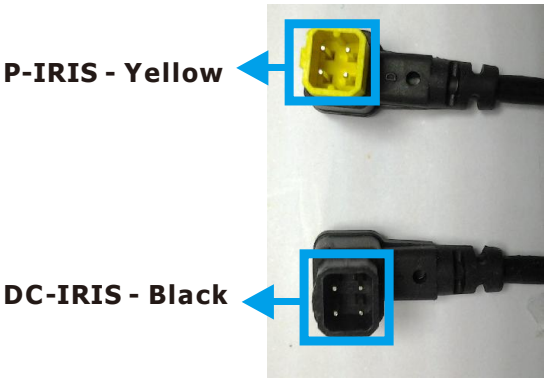
| | | | |
|---|---|---|---|
| DI2 (Digital Input) | Pin 4 | Connect to GND to activate, or leave floating (or unconnected) to deactivate. | Must not be exposed to voltages greater than 30V DC |
| DO(Digital Output) | Pin 5 | Uses an open-collector NPN transistor with the emitter connected to the GND pin. If used with an external relay, a diode must be connected in parallel with the load, for protection against voltage transients. | Max load = <100mA<br>Max voltage = 24V DC (to the transistor) |
| RS-485A | Pin 6 | Data transmission connector for control of external devices. (ex. Pan/Tilt scanners) | Tx |
| RS-485B | Pin 7 | Data transmission connector for control of external devices. (ex. Pan/Tilt scanners) | Tx |



## 2.4. Installation

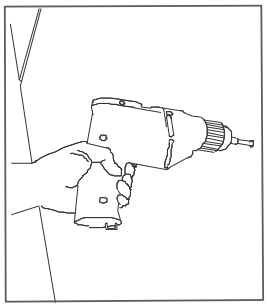
1. Remove the lens cover on the camera.

2. Connect the lens cable with the DC-Iris/P-Iris connector on the rear side.



3. Fasten the lens to the camera.

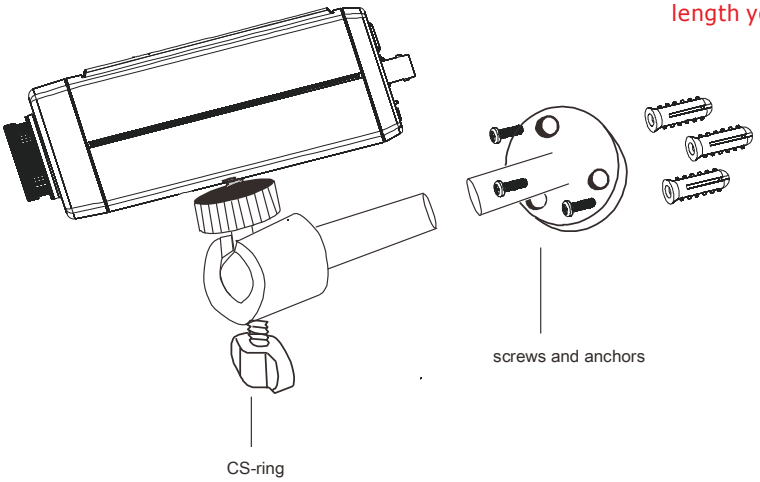
4. Make four screw holes on a flat surface with the electric drill.



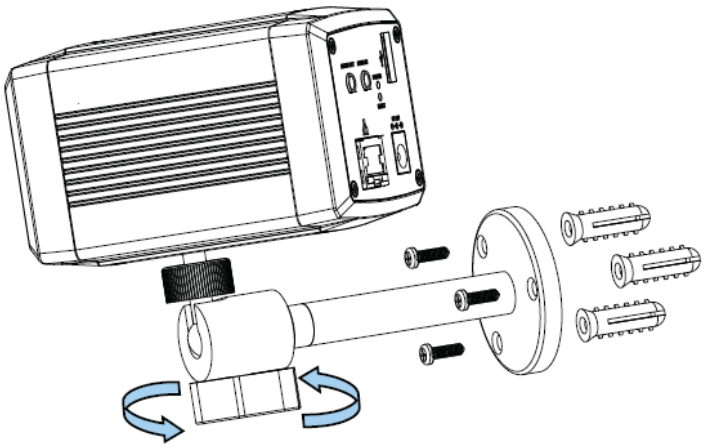
5. Fasten the screws and anchor bolts to secure the camera stand to the surface.
6. Loosen the CS-ring to adjust the desired angle of the camera.
7. Retighten the ring after the desired angle is achieved.

△ Warning

Please confirm the camera stand length you need before joining it.

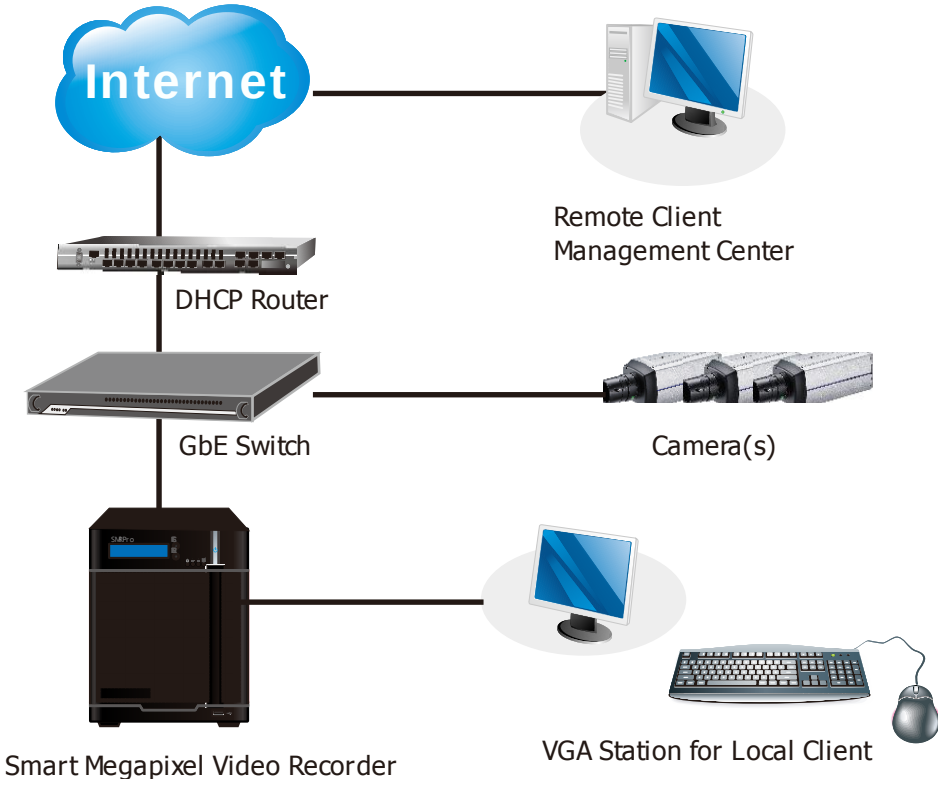



CAM2311SC



8. Connect the power cord to the power port on the rear side.
9. Insert the LAN cable to the LAN port on the rear side.
10. The status LED indicator will blink amber to indicate the boot-up sequence has started. Wait until the LED is in a steady green state, indicating the camera boot-up is complete.

# 2.5. Camera Deployment



## 2.6. Before You Start

Please prepare a PC with Windows (XP or above) and web browsers (Internet Explorer 6.0 or above) installed.

# Chapter 3. Connecting to the Network Camera

This section demonstrates how to connect to the network camera through two methods:

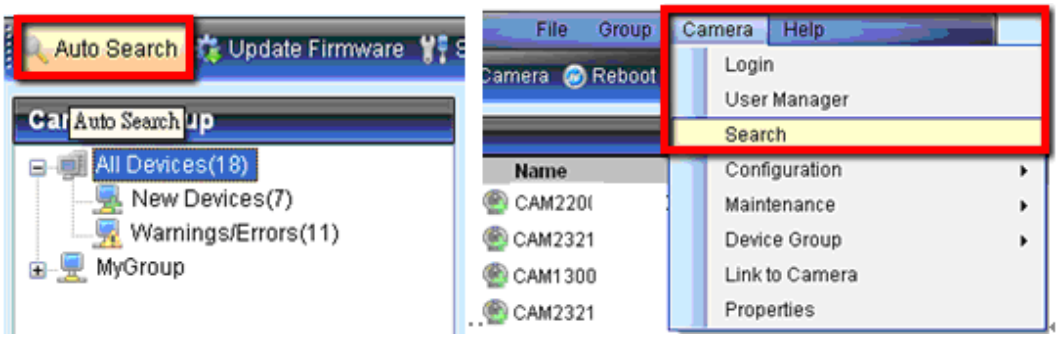
- Web Browser – A simple web-based interface. Internet Explorer is the recommended web browser for use with network cameras, and our examples will be from this browser. Usage on other browsers will be similar.
- RTSP Player – These include common streaming media players, such as *RealPlayer* or *Quicktime Player*. These players can provide live view of the camera using the Real-Time Streaming Protocol (RTSP).

# 3.1. Connecting with a Web Browser

## Obtaining IP address through the IP Utility

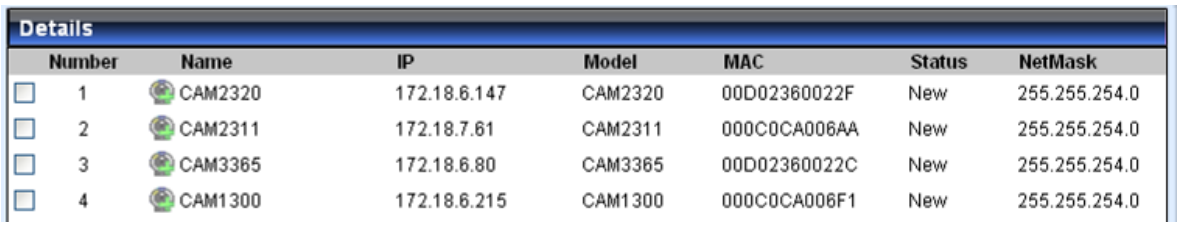
The IP address can be obtained using the IP Utility in your product CD:

1. Double click Start SearchToolInstall.exe to begin the utility installation.
2. After the installation is complete, click the **Auto Search** button or click **Camera > Search** in the menus.




The camera search will begin, and a status bar will display the search progress.

3. The details of the camera will display after the search is finished.



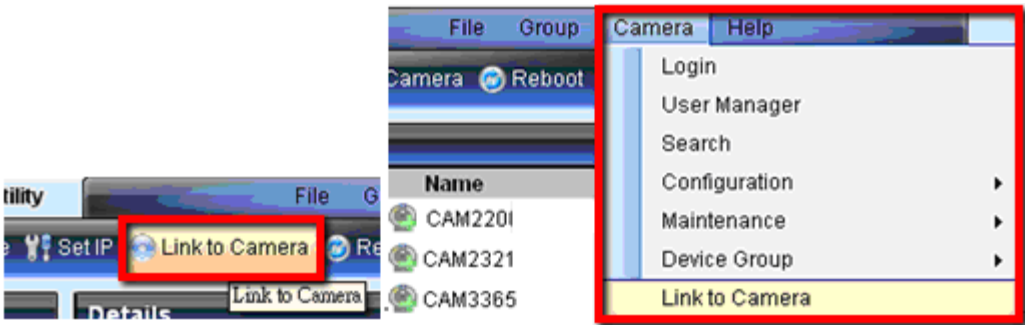

| Number | Name | IP | Model | MAC | Status | NetMask |
|---|---|---|---|---|---|---|
| 1 | CAM2320 | 172.18.6.147 | CAM2320 | 00D02360022F | New | 255.255.254.0 |
| 2 | CAM2311 | 172.18.7.61 | CAM2311 | 000C0CA006AA | New | 255.255.254.0 |
| 3 | CAM3365 | 172.18.6.80 | CAM3365 | 00D02360022C | New | 255.255.254.0 |
| 4 | CAM1300 | 172.18.6.215 | CAM1300 | 000C0CA006F1 | New | 255.255.254.0 |

**Note**: (1) The search may take up to 2 minutes, depending on your network configuration. (2) If your network does not have DHCP service, the default IP address is 192.168.88.10.

## Connecting to the Network Camera

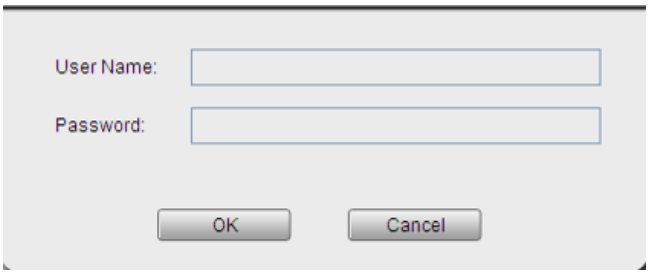
Launch the web browser (Microsoft ® Internet Explorer 6.0 or higher is recommended). Enter the IP address of the network camera in the address bar of your browser and press enter.

You can also Click the **Link to Camera** button or click **Camera> Link to Camera** in the IP Utility menu bar. The camera's live view webpage will open in a browser window.




## Logging into the System

The following information will prompt for logging in:




- **Username** – The username for the domain. **Default is always *admin*.**
- **Password** – The password for the domain. **Default is always *admin*.**

Click **OK.**

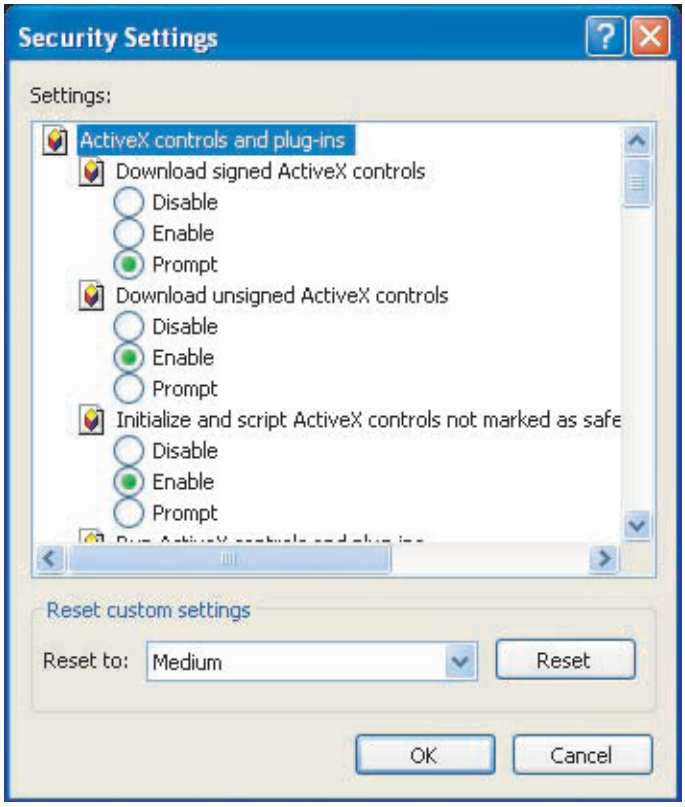
## Installing Active X Components in Internet Explorer

You may be prompted to install ActiveX® components when accessing the network camera's Live View page; click **Yes** when prompted. You will be able to access the camera after installation is completed. Under Windows, this action may require administrator privileges.

If the dialog box suggests that you are not allowed to install ActiveX components, try resolving the problem using the following steps:

1. In Internet Explorer, open Tools> Internet Options> Security. Click the Custom level button.

2. Search for *Download signed ActiveX controls*. Under this heading select **Prompt** and then click **OK**.



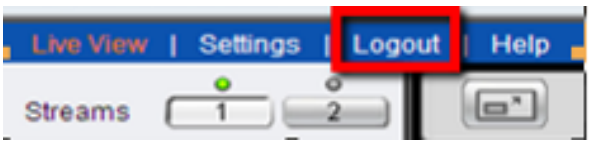

3. Continue installing the Active X components.

4. After installing ActiveX, go to **Tools > Internet Options > Trusted Websites > Sites** and add the IP Address of the camera.

## Logging Out of the System

Logging off of the camera can be performed by closing the browser window.

Users can also choose to click the **Logout** link located at the top of the screen.



## Using the Help Interface

While using the web interface, you may click on the **Help** link located under the title bar. This will bring up a pop-up containing the IP Camera Help manual.

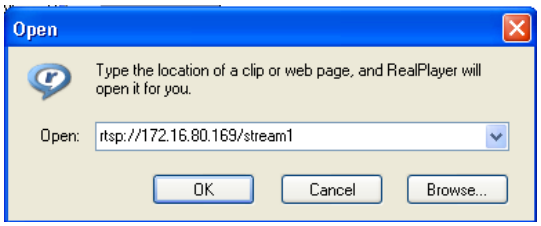
# 3.2. Connecting with an RTSP Player

Connections through RTSP Media Players such as *Real Player* and *QuickTime Player* are supported. We will use Real Player as an example in this section.

1. Launch Real Player.

1. Select **File > Open URL**, to open a URL dialog box.

2. Enter the camera URL in the address bar.




**Note:** The format for RTSP is: rtsp://<IP Address>/<Access>, where <Access> can be found at **Settings> Network> Port Settings> RTSP Setting**. By default the <Access> value should be stream1 and stream2.

3. Click **OK,** the stream should begin playing.

## Connecting with a Mobile Device RTSP Player

In order to access streaming video on 3GPP mobile devices, please make sure the network camera is already online and connected to the Internet. In the **IP** field under the *IP Address* section of the window, enter the IP address of the IP camera.

1. Change the settings under **Settings > Video & Audio> Stream2:** Set the image format as MJPEG4, resolution as QVGA (320x240 or below, and constant bit rate as 128 Mbps or below.

2. Launch the RTSP Player on the 3GPP mobile device and enter the URL address for the camera. The video should start playing.

**Note:** The format for RTSP is: rtsp://<IP Address>/<Access>, where <Access> can be found at **Settings > Network> Port Settings> RTSP Setting**. By default the <Access> value should be stream1 and stream2.

# Chapter 4. Configuration through the Web Interface

Camera configurations can be done through web interface and IP Utility.

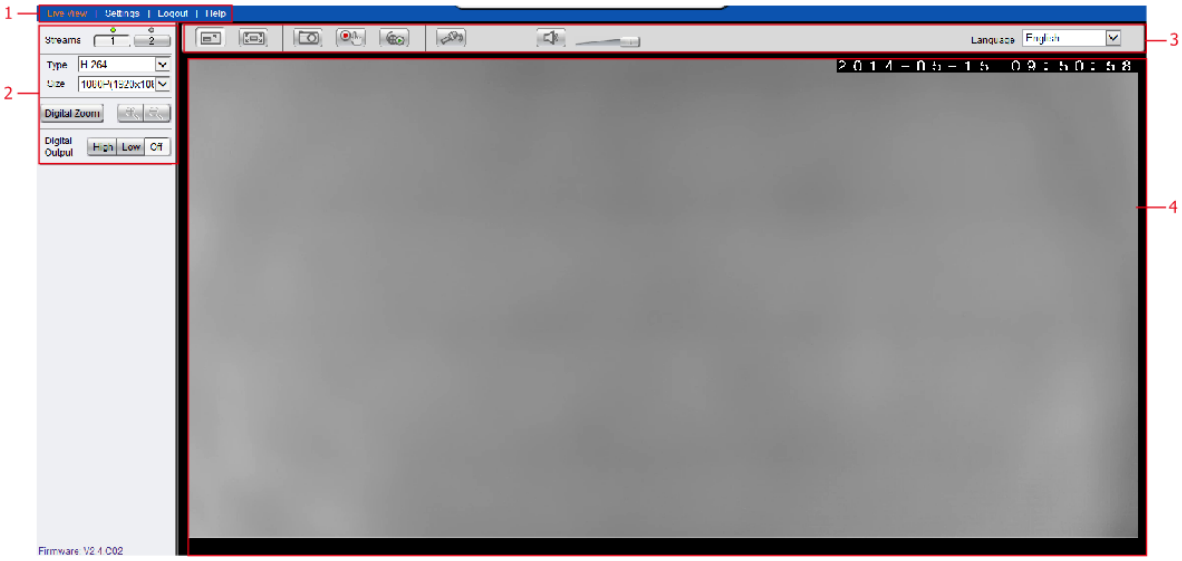
**For web interface, please look into this chapter; for IP Utility, please refer to Chapter 5.

| | | Web Interface | IP Utility |
|---|---|---|---|
| General | Basic Settings | V | X |
| | User Account | V | X |
| | Date & Time | V | X |
| Network | Network Configuration | V | Set IP Only |
| | Port Settings | V | X |
| | UpnP | V | X |
| | Wifi Setting (CAM1300/1311 Only) | V | X |
| Video & Audio Settings | Basic Settings | V | X |
| | Image Appearance Settings | V | X |
| | Video Streams | V | X |
| | Audio Settings | V | X |
| PTZ | RS-485 Settings/PTZ Settings | V | X |
| Recording | Recording Basic Settings | V | X |
| | Recorded File Management | V | X |
| Event Notification | Event Server | V | X |
| | Motion Detection | V | X |
| | Tampering Detection | V | X |
| | DI & DO | V | X |
| | Event Settings | V | X |
| System | MicroSD Card Management | V | X |
| | System Status | V | V |
| | System Log | V | X |
| | Firmware Upgrade | V | V |
| | Resetting to Factory Default Settings | V | X |

| | | | |
|---|---|---|---|
| | Export/Import | V | X |
| | Reboot | V | V |
| Camera Search | | X | V |
| Login | | V | V |
| Properties | | X | V |
| Delete from Tool | | X | V |
| Clearing and Setting Status | | X | V |
| Camera Group Actions | | X | V |
| Configuration Settings | | X | V |
| Focus Tool | | X | V |

# 4.1. Interface Layout

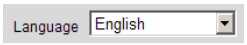
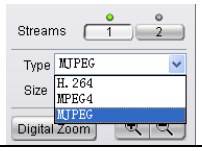
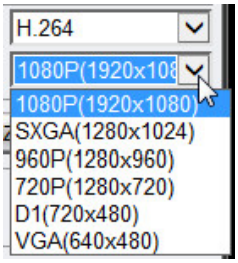
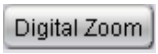
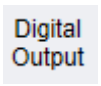
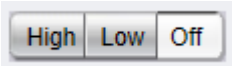
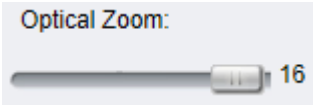
This section demonstrates the layout of the network camera's main interface. The 4 main areas on the interface are:

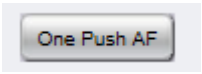
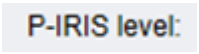
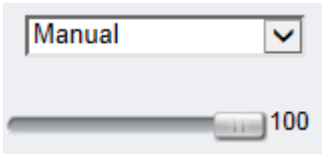
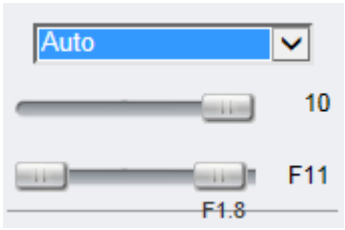



1. **Menu Bar** - The links on this bar allow users to toggle between live-view and settings screens, as well as logout and pull up the help menu.
2. **Live View Controls** - These controls allow users to configure the live view streams and camera live view functionality.
3. **Button Bar** - These controls allow the user to quickly access common features such as live view window resizing, video and still frame capture, interface language, and audio controls.
4. **Live View Window** - This portion of the screen displays the stream selected in the **Live View Control** section of the web interface.

## Control Descriptions

| Control | Description |
|---|---|
| | **Adjust Window Size:** When clicked, the display window size can be adjusted manually to fit the screen. The screen size changes back to the actual image size (resolution). |
| | **Full-Screen:** Goes to full-screen when clicked; press "ESC" to return to windowed view. |
| | **Image Capture:** When clicked, captures the current screen as an image in a new pop-up window. The location for saving the image can be changed under Settings > Recording> Recording Basic Settings. The file name is set to "Camera Name"+yyyymmdd_hhmmss (the Camera Name can be changed under Settings > General> Basic Settings). |
| | **Manual Record:** When clicked, records the current live video. Stops recording when clicked again. The location for storing the video can be changed under Settings > Recording > Recording Basic Settings. |
| | **Playback:** When clicked, playbacks the recordings according to the settings under Settings > Recording > Recording Basic Settings. |
| | **Audio-In:** Turned off by default; clicking once allows audio to be transmitted from a local microphone to the camera. Clicking again stops audio transmission. Multiple users may access the live view page and receive audio from the camera, but only one user at once is allowed to send audio to the camera. |
| | **Mute:** Mutes the audio captured by the camera when clicked, un-mutes the audio when clicked again. |
| | **Volume:** Sets to the current computer volume; Dragging the slider adjusts the volume. |

| Control | Description |
|---|---|
|  | **Language:** Sets the UI language. Available languages include English, Simplified Chinese, and Traditional Chinese. |
| | **Streams:** Allows users to choose which camera stream to view. The indicator above the stream will turn light green when the stream is selected. |
|  | **Video Format:** Sets the compression format for the current stream. Available formats are H.264, MPEG4, and MJPEG. |
|  | **Image size (resolution):** Sets the resolution of the stream currently selected. Options are available for each stream: 1536P (2048 x 1536), 1080P (1920 x 1080), SXGA (1280 x 1024), 720P (1280 x 720), VGA (640 x 480), QVGA (320 x 240) for stream 1 and VGA (640 x 480), QVGA (320 x 240), QQVGA (160 x 120) for stream 2. |
|  | **Digital Zoom:** When clicked, activates digital zoom in the current live-view stream. 2 options are available when clicked:<br> **Zoom In**<br> **Zoom Out** |
|  | **To set the digital output as high voltage or ground or off can be done here.**<br>  |
|  | **To magnify the image, change its focal length to vary its view from 0 to 16.** |
| | **Change the depth of field by adjusting the Near and Far steps.** |

| Control | Description |
| --- | --- |
|  | **AutoFocus can be achieved by pressing this button.** |
|  | **P-IRIS level can be adjusted Manually or Automatically.**<br>  <br>  |

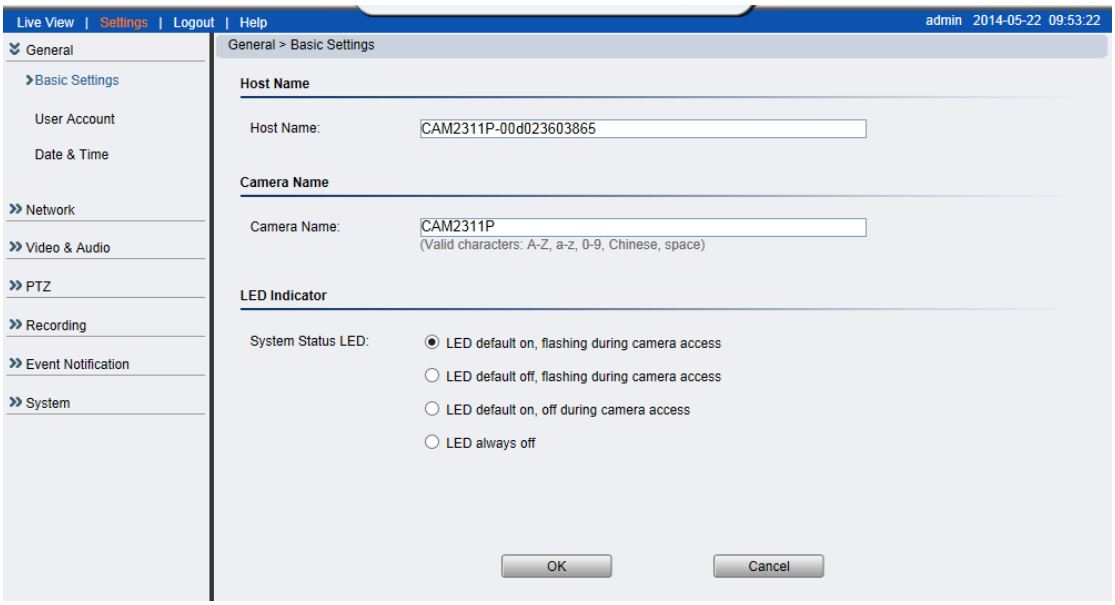
# 4.2. Settings

Camera settings may be changed by clicking on the **Settings** link located in the title bar. This will bring up a menu list of configuration menus for all major camera settings.

## General

General setting menus are found under **Settings > General**.

### Basic Settings




Basic settings may be accessed under **General > Basic Settings**. The following settings can be made:

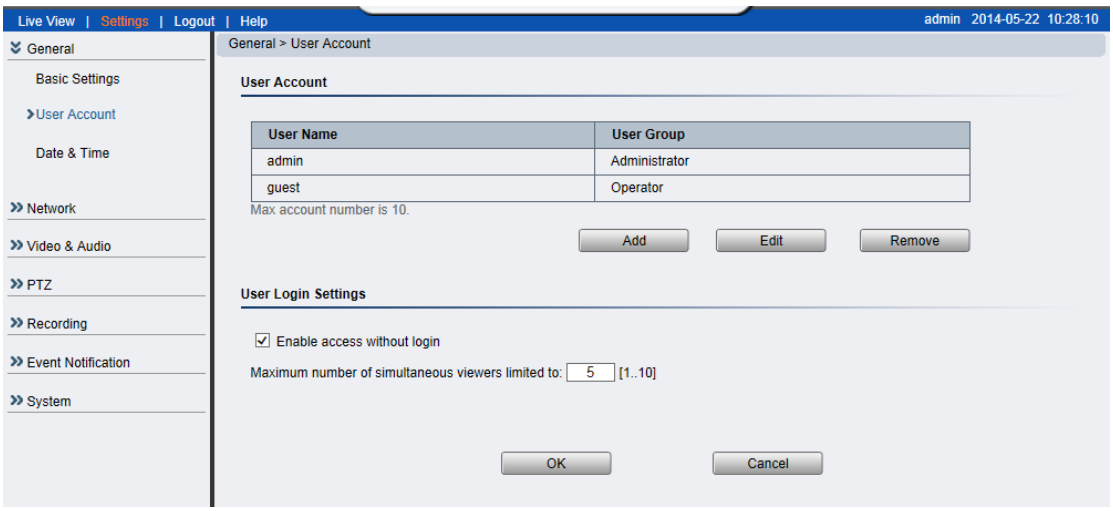
- **Host Name:** by default set to "model name + MAC address"; displays on the center of the main page. Users may replace the default name with a new name consisting of alphanumeric characters, spaces and the ":" character.
- **Camera Name**: by default set to "model name"; after selecting Camera Name" from **Settings > Video & Audio> Basic Settings**, the Camera Name will show on the display. Users may replace the default name with a new name consisting of alphanumeric characters, spaces and the ":" character.
- **System Status LED:** changes the behavior of the status LED on the front of the camera. There are four possible behaviors:

- **LED on when camera is on** - LED default on, flashing during camera access.
- **LED on during camera access** - LED default off, flashing during camera access
- **LED off during camera access** - LED default on, off during camera access
- **LED always off** - LED always off

Click **OK** to save or **Cancel** to abort the changes before you leave the page.

## User Account

The User Account section, found under **General > User Account,** controls the user account information and privileges.




There are two pre-configured accounts:

- **admin** - This is the default administration account, and cannot be deleted.
- **guest** - This is an account with only live view capability.

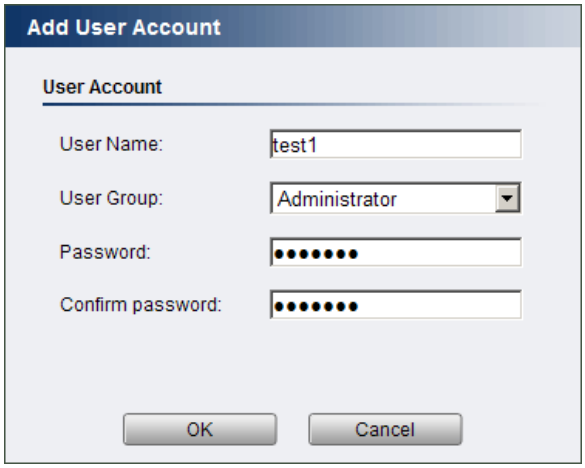
There are also two basic settings under user account settings:

- **Enable access without login** - Checking the checkbox will allow users to view the camera stream without having to login.
- **Maximum number of simultaneous viewers limited to** - Enter a number from 1 to 10 in this field to limit the number of users that can view the live view stream for this camera. This option will only be displayed once you add an account.

Click **OK** to save or **Cancel** to abort the changes before you leave the page.

### Adding Accounts

In **General > User Account** under the **User Account** heading, click on “Add”. Up to 10 accounts can be added to the system.

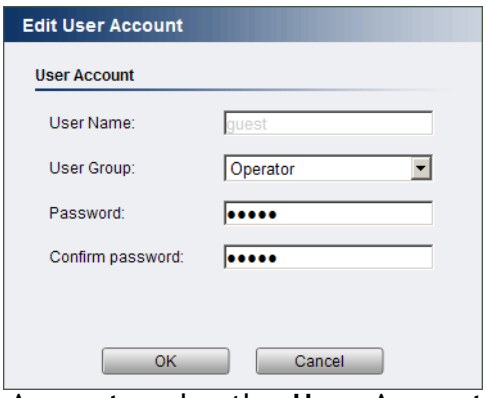



All User Names and Passwords must be combinations of alphanumeric characters, “:”, “-“, “_” between 4 and 20 characters in length, and must begin with an alphabet letter. Fill out the following fields:

- **User Name** - The identifier name used to login to the system.
- **User Group** - The system allows for 2 types of users.
    - **Administrator** - Administrators have full access privileges.
    - **Operator** - Operators can only access the live view page.
- **Password** - A passkey used to control user access. The password must be a combination of alphanumeric characters, “:”, “-“, “_” between 4 and 20 characters in length, and must begin with an alphabet letter. This password should be retyped in the **Confirm password** field, to ensure that the correct key is saved.

Click **OK** when finished to add the user to the system.

## Editing Accounts




In **General > User Account** under the **User Account** heading, select an existing account by clicking on the account entry. The entry will be highlighted in yellow. Clicking **Edit** will allow you to change the following fields:

- **User Group** - The system allows for 2 types of users.
    - **Administrator** - Administrators have full access privileges.
    - **Operator** - Operators can only access the live view page.
- **Password** - A passkey used to control user access. The password must be a combination of alphanumeric characters, ":", "-", "_" between 4 and 20 characters in length, and must begin with an alphabet letter. This password should be retyped in the **Confirm password** field, to ensure that the correct key is saved.

Click **OK** when finished to save any changes.

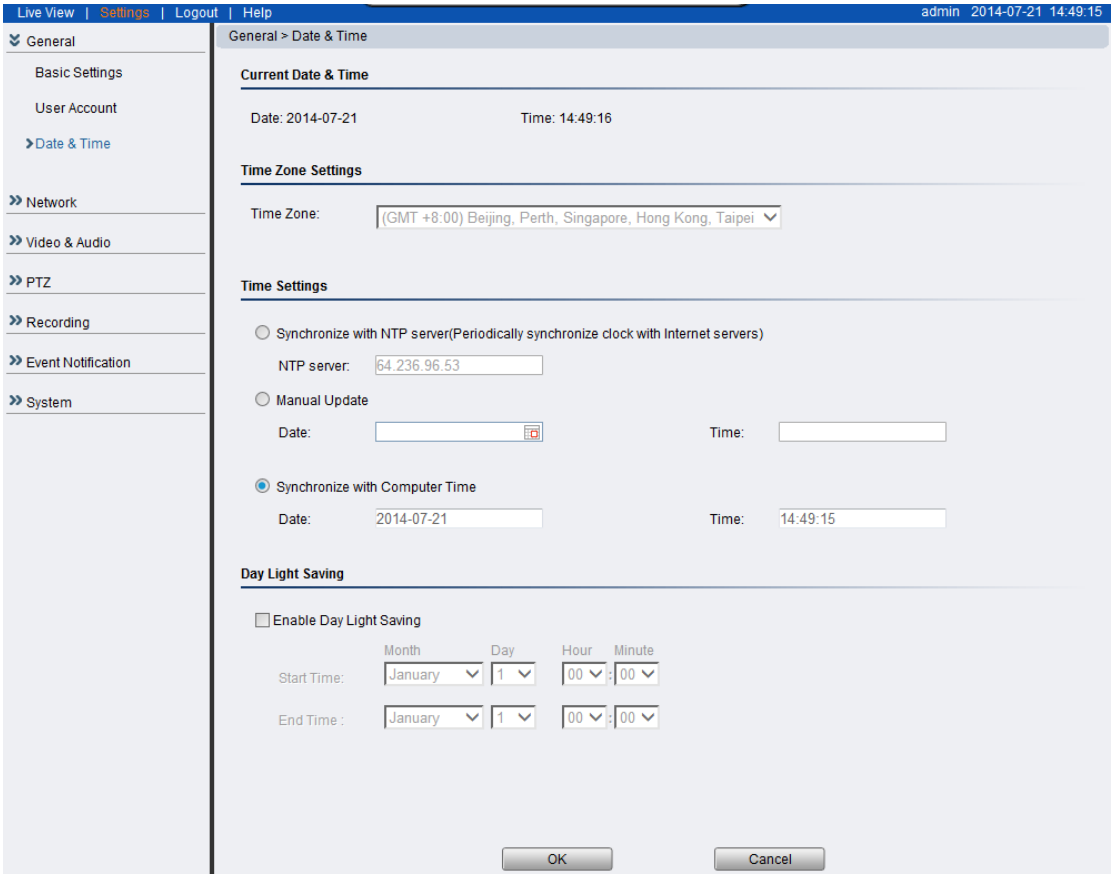
**Note:** Only accounts that are not currently logged-in can be edited.

## Deleting Accounts

In **General > User Account** under the **User Account** heading, select an existing account by clicking on the account entry. The entry will be highlighted in yellow. Click **Remove** and, when prompted to confirm deletion, click **OK** to remove the account.

## Date & Time

Date and time settings can be accessed at **General > Date & Time.**




*Current Date & Time* displays the current system date and time.

## Time Zone Settings

The time zone can be set using the dropdown menu. This menu is only applicable when selectable when **Synchronize with NTP Server** is chosen under **Time Settings**.

## Time Settings

There are 3 ways to set the system time:

- **Synchronize with NTP server** - NTP is a protocol for synchronizing the system clock to an external server. If this option is chosen, enter the IP address of a known NTP server in the **NTP Server** field. You must also choose the appropriate time zone under **Time Zone Settings**.
- **Manual update** - Updates the time manually. Choose the appropriate date and enter a time for the system.
- **Synchronize with computer time** - Synchronizes the time with the computer's internal clock.

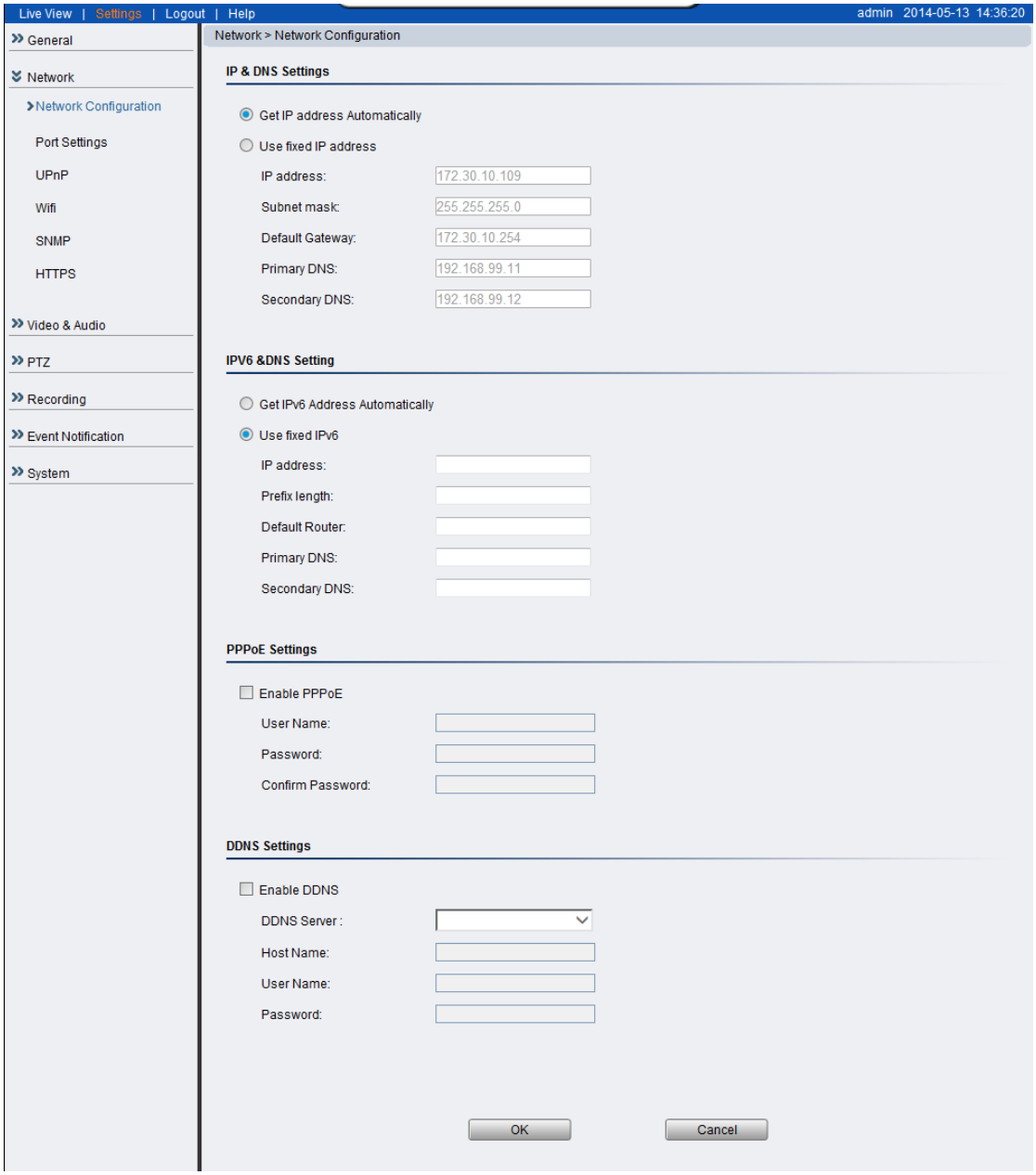
### Day Light Saving

Users can set the Day Light Saving Time by ticking on **Enable Day Light Saving**.

Click **OK** to save or **Cancel** to abort the changes before you leave the page.

# Network

The network settings, including network configuration, port configuration, and universal plug and play (UPnP) settings are used to configure camera connectivity. These settings are found under the **Settings > Network** context.



### Network Configuration

These settings are used to configure basic network access for the camera. They are found under **Network > Network Configuration**.

Most of these settings vary with your specific hardware setup; therefore the defaults are set for common SOHO level usage. If you are using the camera in an enterprise environment, please check with your IT department to determine the correct settings for this section.

### IP & DNS Settings

These settings are used determine the IP address of the network camera.

- **Get IP address automatically** - Automatically acquires IP address from a DHCP service. This is the default setting.
- **Use fixed IP address** - Sets a fixed IP address. You must also manually fill in IP address, Subnet mask, Default gateway, Primary DNS, and Secondary DNS fields. The network camera can be connected to the network upon completion.

### IPV6 & DNS Settings

This only works if your network environment and hardware equipment support IPv6.

- **Get IPv6 address automatically** – the network camera will listen to router advertisements and be assigned with a link-local IPv6 address accordingly.
- **Use fixed IPv6 address** - Sets a fixed IPv6 address. You must also manually fill in IP address, Prefix length, Default gateway, Primary DNS, and Secondary DNS fields. The network camera can be connected to the network upon completion.

### PPPoE Settings

This feature is disabled by default. Connecting to the network using PPPoE (Point-to-Point Protocol over Ethernet) requires a user name and password from your ISP (Internet Service Provider). Select **Enable PPPoE** and fill in valid user name and password to connect the camera to the Internet.

### DDNS Settings

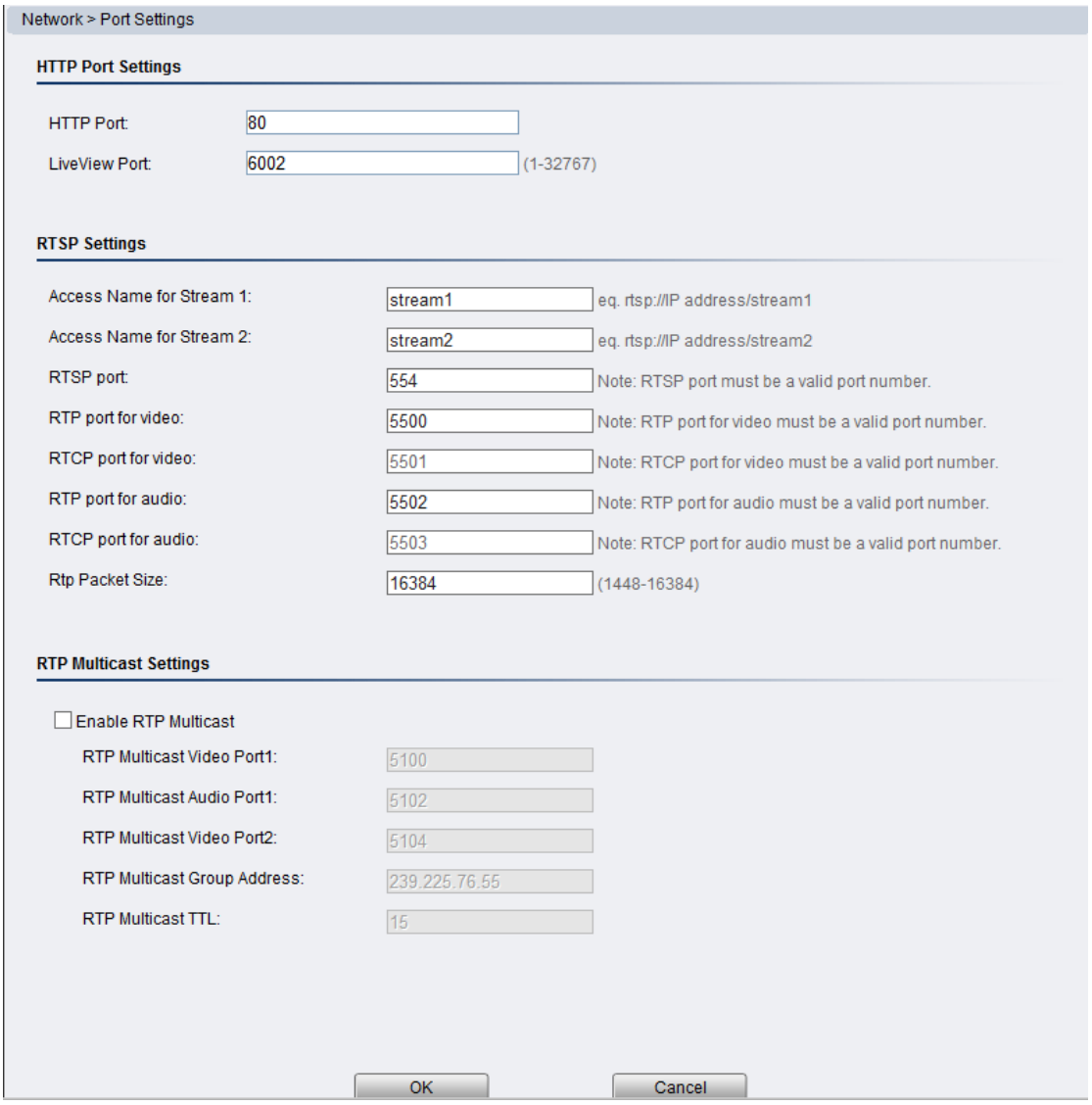
DDNS (Dynamic Domain Name Server) is a protocol that enables the camera to maintain a static connection address, even when its IP changes. Access using this feature is disabled by default.

Connecting using DDNS requires registration on third-party websites for DDNS services. Select desired DDNS service website, check the **Enable DDNS** option, and fill in valid user name and password. You can then access the camera through the registered domain name.

Click **OK** to save or **Cancel** to abort the changes before you leave the page.

## Port Settings

Ports are a software construct used to multiplex the transmission information to and from the camera. They act as separate endpoints within an IP address where software "listens" for incoming information. This section, which can be accessed under **Network > Port Settings,** includes *HTTP Port Settings*, *RTSP Settings* and *RTP Multicast Settings*.




**Note:** The default port numbers in this section are, for the most part, well-known or commonly known values. We recommend that they not be changed unless there is a specific reason to do so.

### HTTP Port Settings

The **HTTP port** number is used access the camera via the HTTP protocol.

The **LiveView Port** number is used to transmit live-view information.

### RTSP Settings

Real-Time Streaming Protocol (RTSP) is a protocol used to establish and control media sessions between end points.

You may change the access name for stream 1, stream 2, the RTSP port number, the RTP port for video, the RTCP port for video, RTP port for audio, and RTCP port for audio.

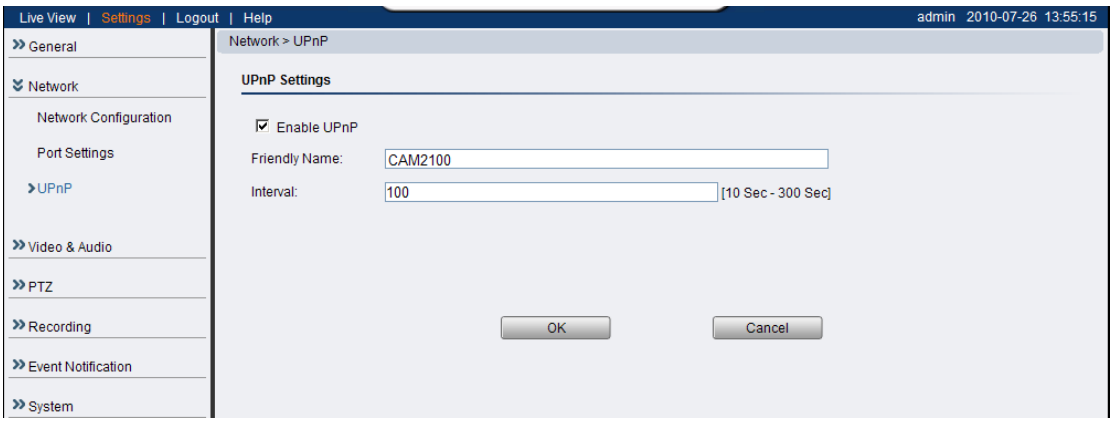
> **Note:** The RTP port number must be an even number. After entering the RTP port number, the RTCP port number will automatically be set to the RTP port number + 1.

### RTP Multicast Settings

Tick **Enable RTP Multicast** to set up multicast via the RTP protocol. The **RTP Multicast video/audio port and group address** can also be set**.**

Click **OK** to save or **Cancel** to abort the changes before you leave the page.

### UpnP




Universal plug and play (UPnP) is a protocol that simplifies the implementation of networks by allowing new hardware to connect seamlessly to a network. The settings for this feature can be found under **Network>UPnP**.

To enable UPnP, first check the **Enable UPnP** box. If you wish to change the default values, there are two fields that can be edited.

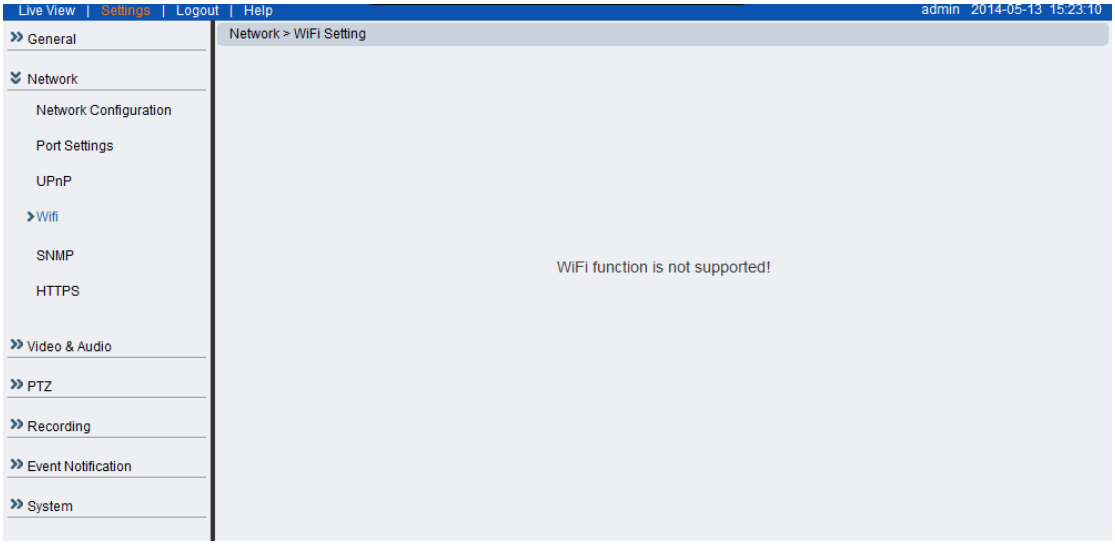
- **Friendly Name** - An identifier for the camera on the network.
- **Interval** - The time between camera-sent UPnP updates.

Click **OK** to activate UPnP or **Cancel** to abort the changes before you leave the page. Once activated, the camera will be visible to other devices on the network.

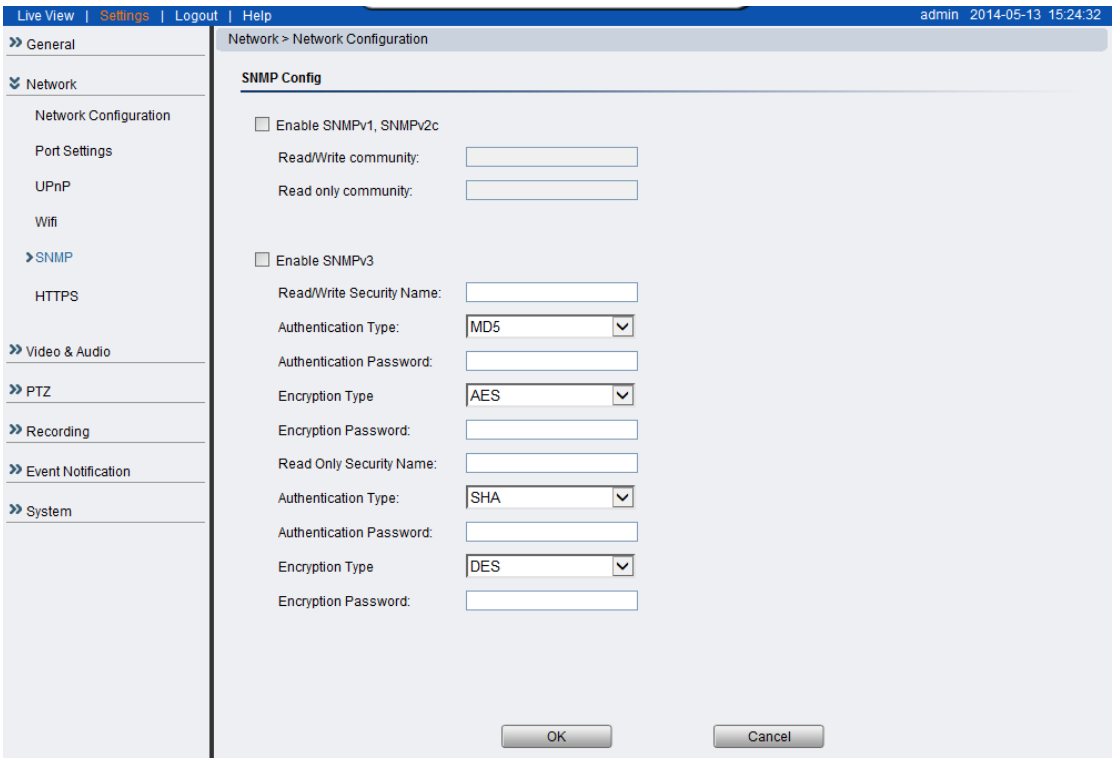
**Note:** If the computer does not have UPnP installed, you can add it by going to **Start > Control Panel > Add or Remove Programs**. In the Add or Remove Programs page, select **Add/Remove Windows Components > Networking Services** and click **Details**. Select **UPnP** from the popup window, and **OK** out to install **UPnP** services.

## Wifi

Wifi functionality is not supported for CAM2xxx series.



## SNMP




The Simple Network Management Protocol is an application layer protocol that facilitates the exchange of management information between network devices. It helps network administrators to remotely manage network devices and find, solve network problems with ease. The settings for this feature can be found under **Network > SNMP**.

■ The SNMP consists of the following three key components:

1. Manager: Network-management station (NMS), a server which executes applications that monitor and control managed devices.

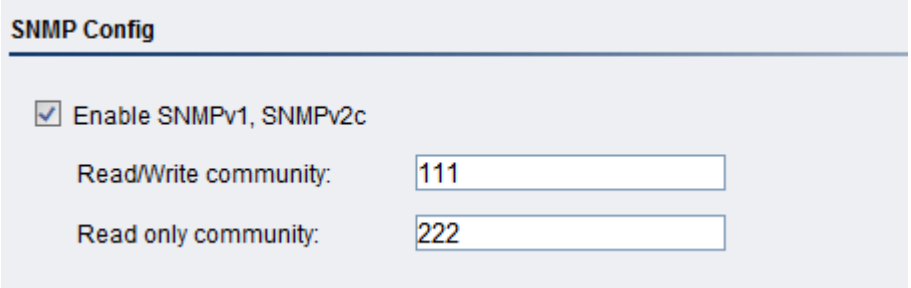
2. Agent: A network-management software module on a managed device which transfers the status of managed devices to the NMS.

3. Managed device: A network node on a managed network. For example: routers, switches, bridges, hubs, computer hosts, printers, IP telephones, network cameras, web server, and database.

Before configuring SNMP settings on the this page, please enable your NMS first.

To enable SNMP, check the **Enable SNMPv1, SNMPv2c** box.

Select this option and enter the names of Read/Write community and Read Only community according to your NMS settings. For example: 111/222.




check the **Enable SnMPv3**

This option contains cryptographic security, a higher security level, which allows you to set the Authentication password and the Encryption password.

■ Security name: According to your NMS settings, choose Read/Write or Read Only and enter the community name.

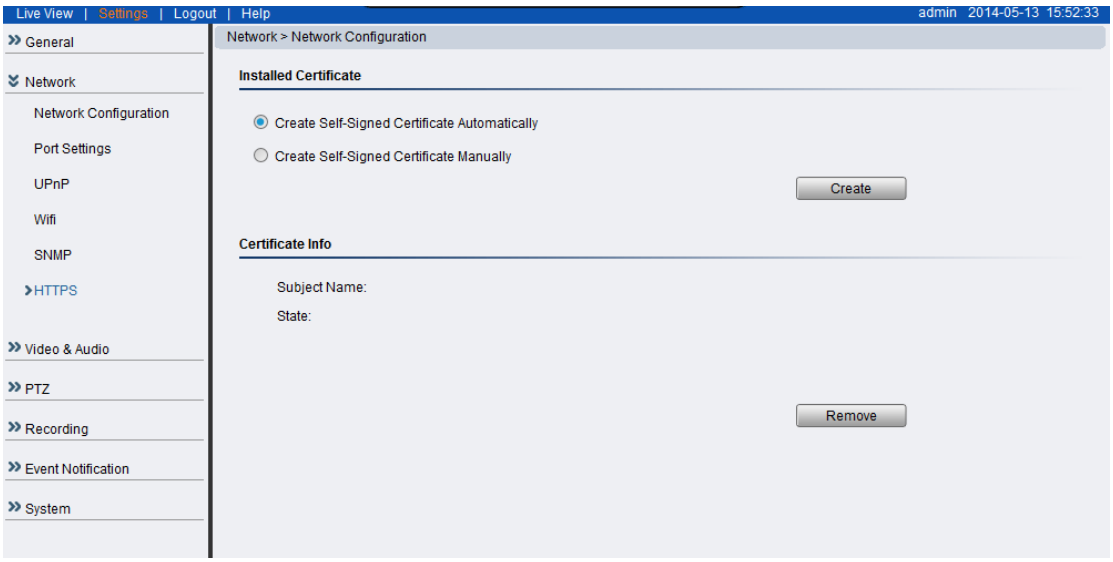
■ Authentication type: Select MD5 or SHA as the authentication method.

■ Authentication password: Enter the password for authentication (at least 8 characters).

■ Encryption password: Enter a password for encryption (at least 8 characters).

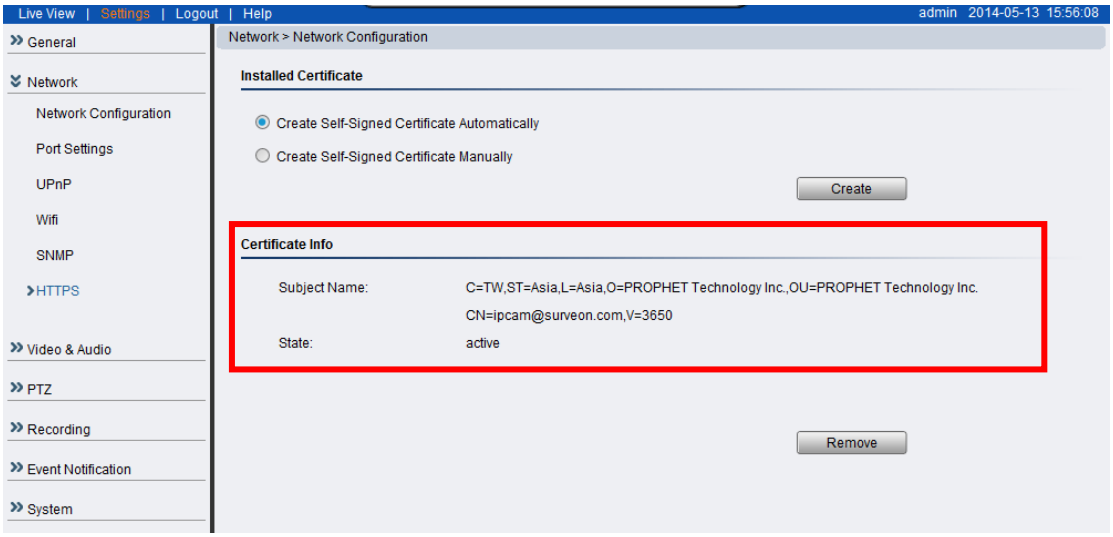
Click **OK** to activate SNMP or **Cancel** to abort the changes before you leave the page. Once activated, the camera will be visible to other devices on the network.

## HTTPS




Hypertext Transfer Protocol Secure (HTTPS) is a communications protocol for secure communication over a computer network, with especially wide deployment on the internet.

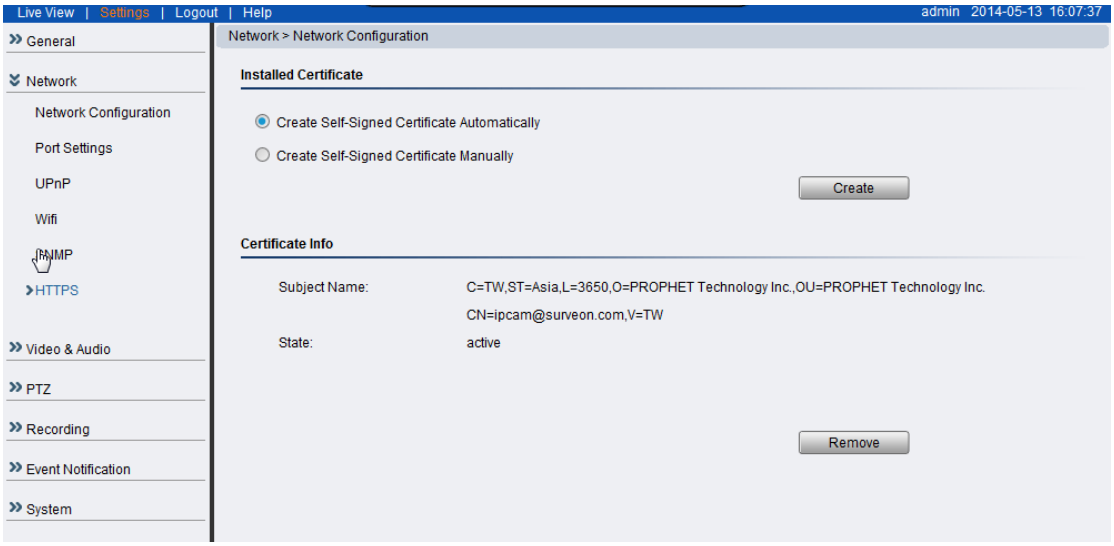
Select **Create Self-Signed Certificate Automatically** and click **"Create"** to have the certification authority automatically. Once succeed, you will see the **Certificate Info** in the next section of this web page.




Click **"Remove"** to delete the set certificate if you wish to change the setting.

Or **Select Self-Signed Certificate Manually** and click **"Create"** to have the certification authority manually. A window will be prompted for creating certificate information.

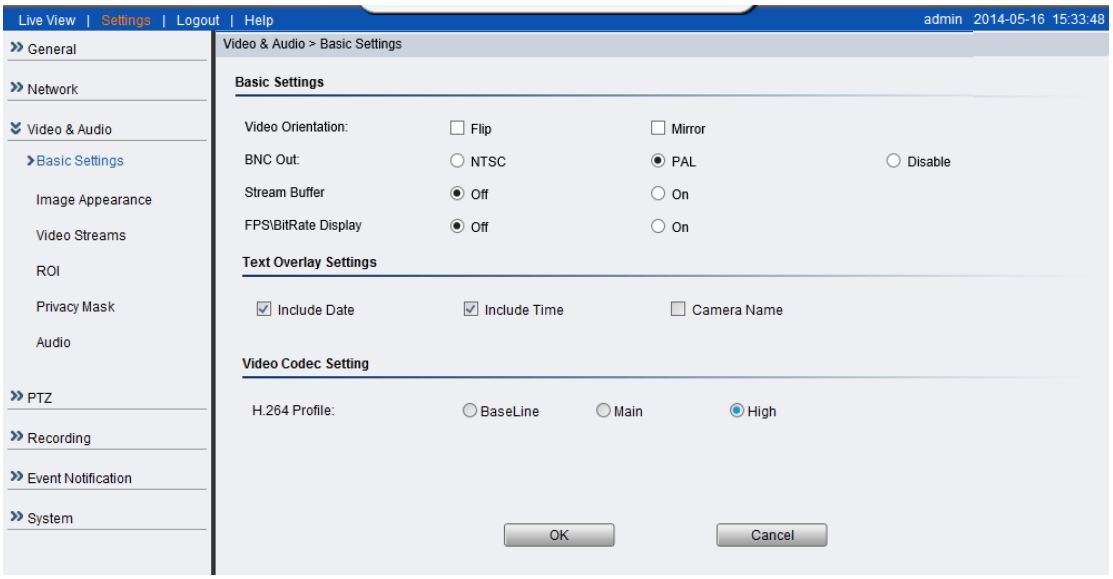
Edit the information in the files if necessary and click **"OK"** to confirm the setting. Once succeed, you will see the **Certificate Info** in the next section of this web page.




Click **"Remove"** to delete the set certificate if you wish to change the setting.

# Video & Audio Settings

Video and audio are the heat of a network camera's functionality. The settings for video and audio can be found under **Settings > Video & Audio**. Under this section, you can access basic video and audio settings, video appearance parameters, video stream settings, as well as audio parameters.




## Basic Settings

Basic settings pertain to simple live-view tweaks. These parameters can be found under **Video & Audio> Basic Settings**.

- **Video Orientation**

In certain mounting situations, the default video output may not be oriented correctly. This setting allows you to change the orientation of the output video.

  - **Flip** - flips the image vertically.
  - **Mirror** - flips the image horizontally.

- **BNC Out (not for CAM2311SC/2511SC)**
  - NTSC
  - PAL
  - Disable

- **Stream Buffer**
  - **Off**
  - **On**

- **FPS\BitRate Display**
  - **Off**
  - **On**

### Text Overlay Setting

The text overlay involves is the text displayed in the black bar at the top of the output screen. You can display multiple text messages at the same time. (Only the camera name will display if the resolution is 160 x 120).

- **Include Date** - Displays the current date.
- **Include Time** - Displays the current time.
- **Camera Name** - Displays the name of the camera.

### Video Codec Setting

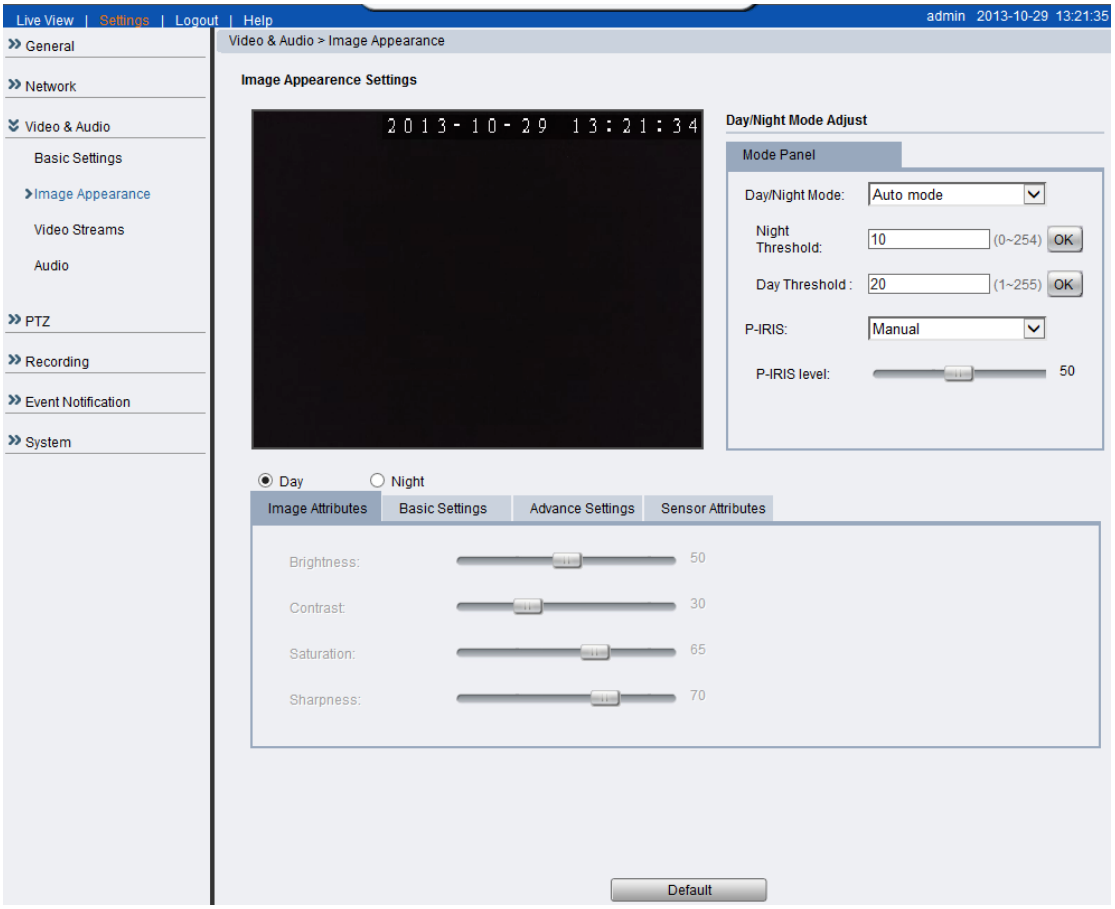
H.264 profile can be further set to:

- **BaseLine** - restricts the encoder to certain basic features only for mobile applications.
- **Main** - is used for standard-definition digital TV broadcasts that use the MPEG-4 format as defined in the DVB standard.
- **High** - is used for high-definition broadcasts and disc storage applications.

## Image Appearance Settings

These settings, found under **Video & Audio > Image Appearance**, deal with the video output of the camera. There are two tabs, *Image Attributes* and *Sensor Configuration*, as well as *Advanced Settings*.

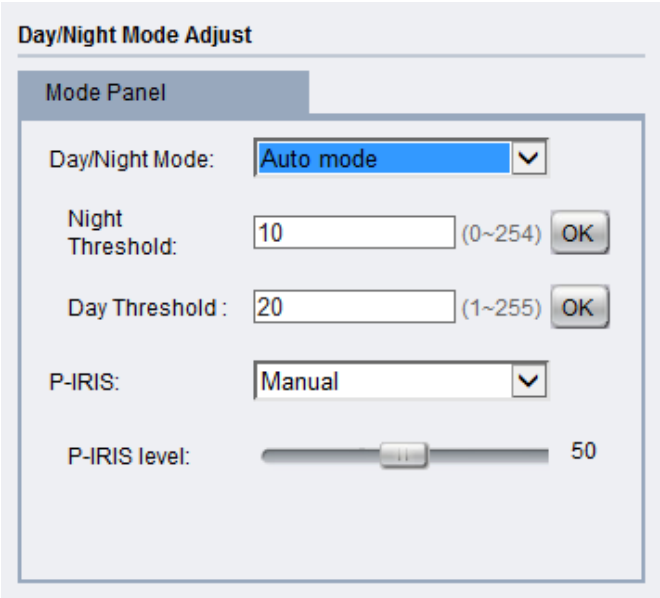
## Image Appearance (for CAM2311/2331/2331P)



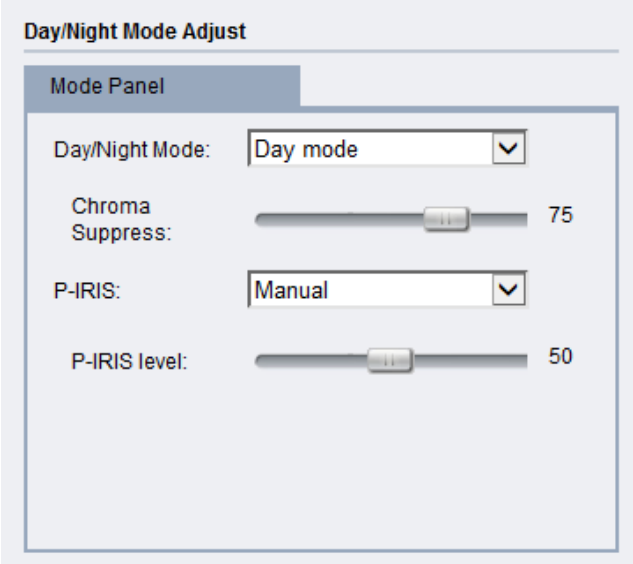
## Day/Night Mode Adjust

### Mode Panel

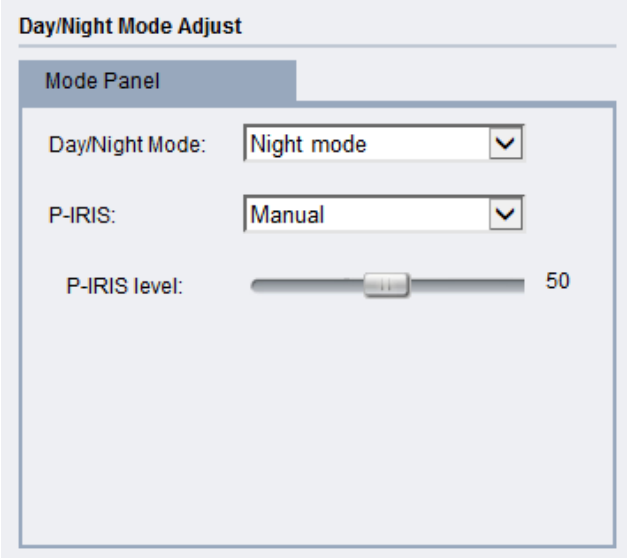
**Day/Night Mode** - Sets the day (color) and night (black and white, IR cut filter off where applicable.) Night mode sacrifices color information to produce a clear picture with less light.



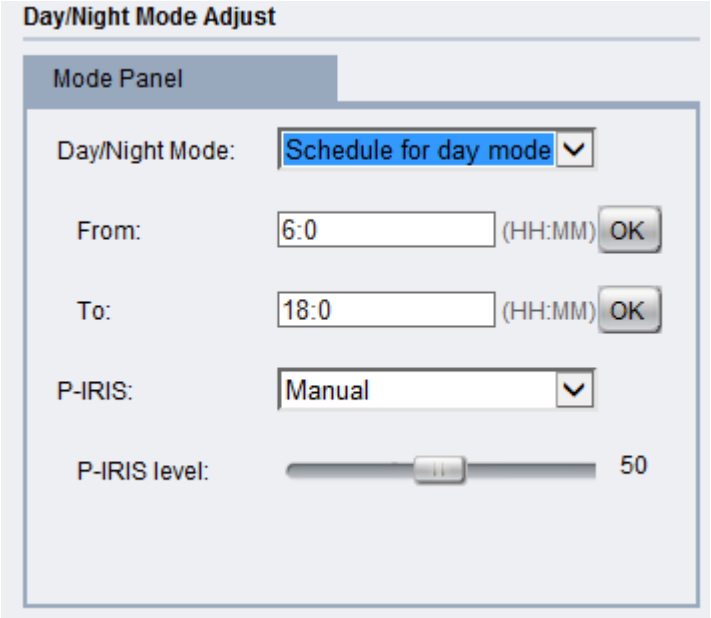

- **Auto** - The camera will determine when the light levels require a switch.
  - **Night Threshold** - The threshold which the camera will switch to night mode.
  - **Day Threshold** - The threshold which the camera will switch back to day mode.
- **P-IRIS (CAM2331P)**
  - **Auto** – Adjust the P-Iris automatically.
    - **P-Iris Sensitivity**
    - **P - Iris Level**
  - **Manual** –Adjust the P-Iris manually.
    - **P - Iris Level**




- **Day mode** - Forces day mode.
    - **Chroma Suppress** - Reduces the false color phenomena.
- **P-IRIS (CAM2331P)**
    - **Auto** – Adjust the P-Iris automatically.
        - **P-Iris Sensitivity**
        - **P - Iris Level**
    - **Manual** –Adjust the P-Iris manually.
        - **P - Iris Level**

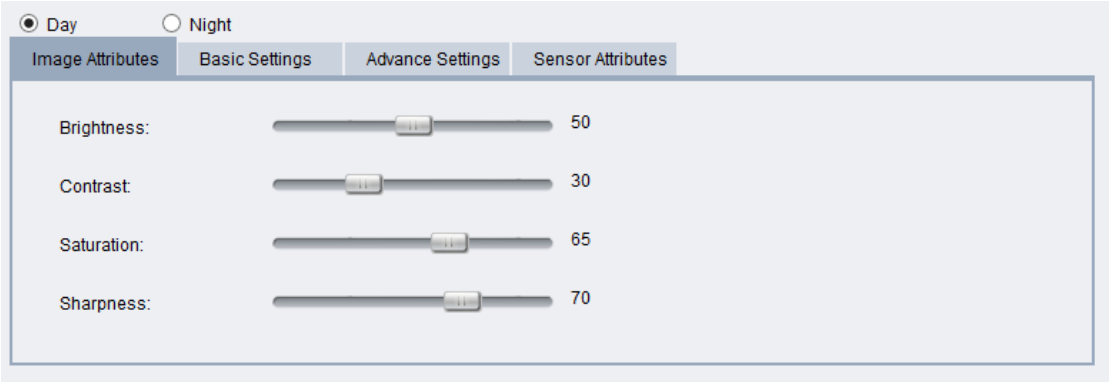



- **Night mode** - Forces night mode.
- **P-IRIS (CAM2331P)**
    - **Auto** – Adjust the P-Iris automatically.
        - **P-Iris Sensitivity**
        - **P - Iris Level**
    - **Manual** –Adjust the P-Iris manually.
        - **P - Iris Level**




- **Schedule for day mode** - Allows the user to set a time for day/night transitions.
  - **From:** - The time, in hours and minutes, when the camera will be in day mode.
  - **To:** - The time, in hours and minutes, when the camera will switch to night mode.
- **P-IRIS (CAM2331P)**
  - **Auto** – Adjust the P-Iris automatically.
    - **P-Iris Sensitivity**
    - **P - Iris Level**
  - **Manual** –Adjust the P-Iris manually.
    - **P - Iris Level**

## Image Attributes



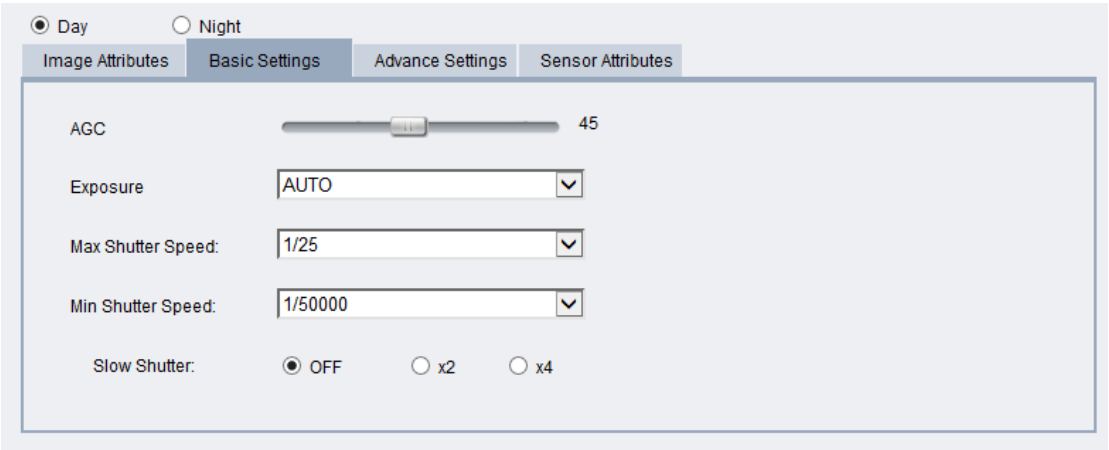

These parameters deal with the image lighting and color. All parameters are values ranging from (0) to (100). Dragging the slider to the right increases the value, while dragging to the left lowers the value. The adjustments will be displayed in real-time in the window to the left of the sliders.

- **Brightness** - Adjusts the perceived light intensity of the image.

**Note:** In certain situations, the sensor may experience banding issues. In these cases, please raise the brightness.

- **Contrast** - Adjusts the overall difference in the light vs dark areas.
- **Saturation** - Adjusts the colorfulness of a color relative to its own brightness.
- **Sharpness** - Adjusts the edge contrast of the image.

## Basic Settings

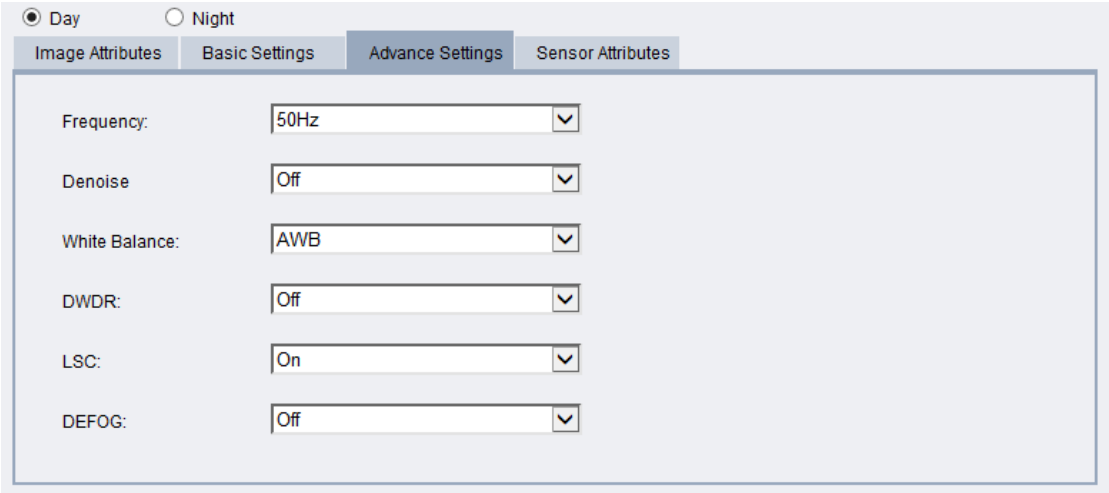



- **AGC Gain** - Automatic gain control (AGC) adjusts the video gain level to a variety of inputs. This setting provides a baseline value for the AGC. Values higher than this will be darkened, and values that are

lower will be brightened. AGC should be adjusted so that the area of interest is best lit.

- **Exposure** - Sets how the camera captures images. Longer shutter times allow more light into the sensor, resulting in a cleaner picture, however longer shutter times can result in motion blur.
- **Max Shutter Speed** - users can choose the Max Shutter Speed from 1/30, 1/60, 1/120, 1/1000 and 1/10000.
- **Min Shutter Speed** - users can choose the Min Shutter Speed from 1/30, 1/60, 1/120, 1/250, 1/500, 1/750, 1/1000, 1/1500, 1/2000, 1/10000 and 1/100000.
    - **Slow Shutter** - Slows the shutter speed to 1/2 or 1/4.

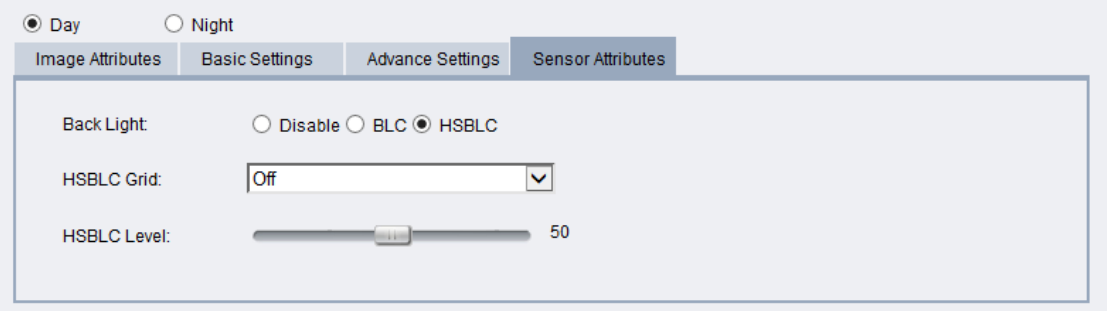
## Advanced Settings




- **Frequency** - The user can choose to compensate for 50Hz or 60Hz lighting.
- **Denoise** – Removes video noises.
- **White Balance** - This setting allows users to choose the color balancing method used.
    - **AWB** - Automatically chooses white level.
    - **MWB** - The user must specify the red and blue gain levels to achieve the correct white level.
        - **R Gain** - The gain applied to the red video channel.
        - **B Gain** - The gain applied to the blue video channel.

- **DWDR** - Specifies if the wide dynamic range (WDR) function is activated. If activated, the WDR function will attempt to preserve detail at contrast extremes.
- **LSC**(Lens Shading Compensation) **-** Lens shading is the reduction in light falling on the image sensor away from the center of the image caused by physical obstructions. To suppress the lens shading effect on the corners is called the lens shading compensation. DEFOG- Adjusts picture quality during bad weather conditions.
- **Defog -** Adjusts picture quality during bad weather conditions.

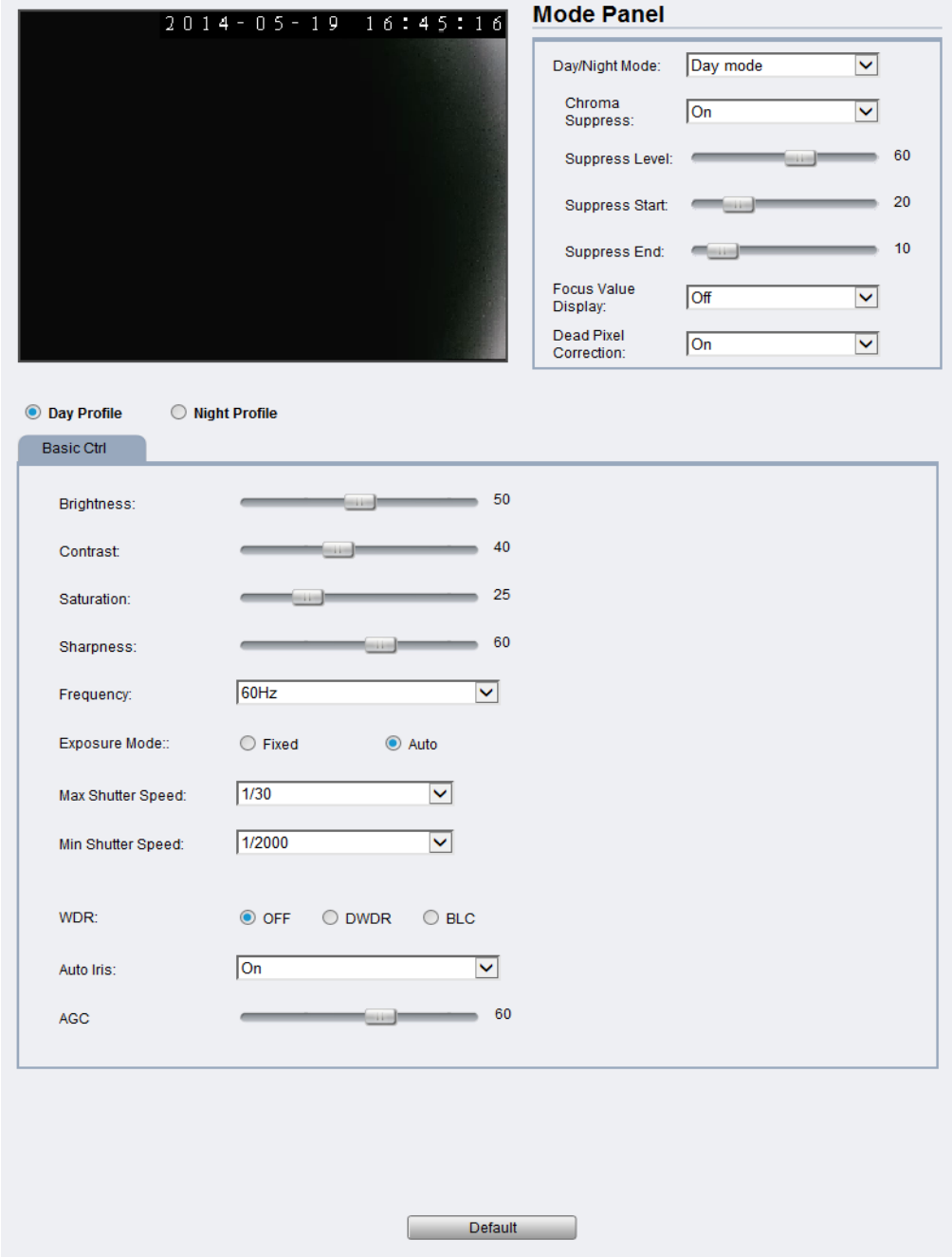
## Sensor Attributes




- Black light
  - **BLC** (Backlight compensation) - Adjusts video gain to automatically correct the exposure of objects that are strongly backlit. This brightens the image, at the cost of overexposing areas of high illumination.
    - **BLC Area View** - Users can choose to view the area for BLC effect. When it is opened, you will see the grids showing on the live view screen.
    - **BLC Level**
  - **HSBLC** (High Suppression Backlight Compensation) - Backlight compensation helps resolve detail in darker areas even when brightly lit objects are in view. Highlight suppression goes further, darkening full white areas to achieve optimum video quality.

- **HSBLC Grid** - Users can choose to view the areas for HSBLC effect. When it is opened, you will see four squares showing on the live view screen.
- **HSBLC Level**

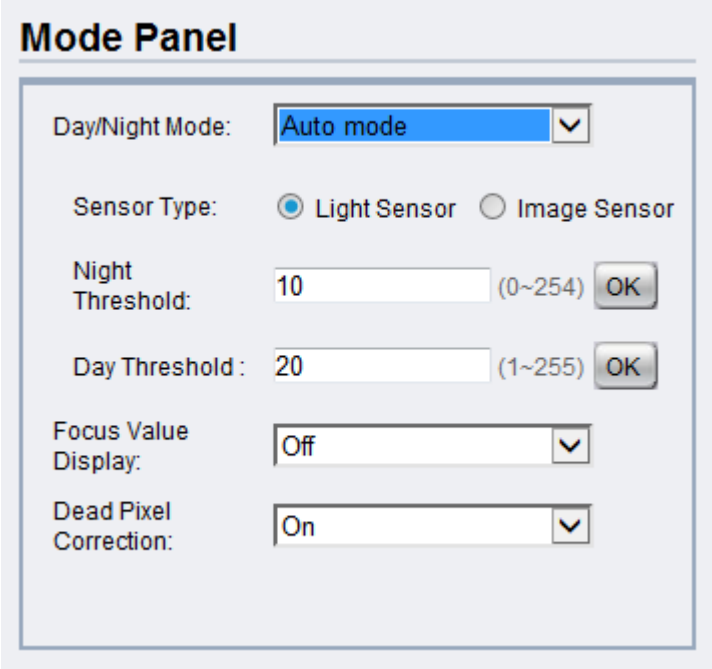
## Image Appearance
## (for CAM2311SC/2331SC/2331SP/2441/2441P/2511/2511SC)




## Mode Panel

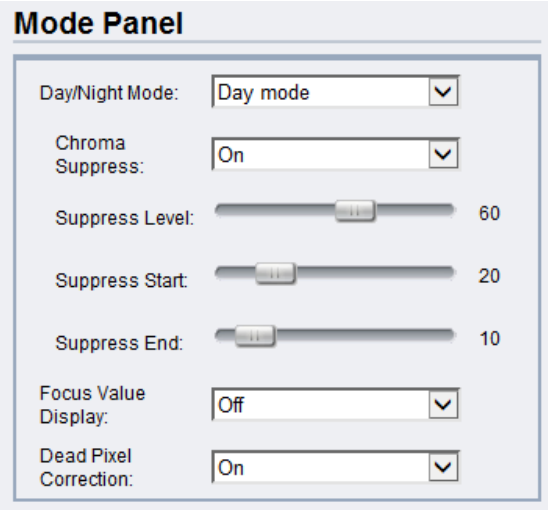
**Day/Night Mode** - Sets the day (color) and night (black and white, IR cut filter off where applicable.) Night mode sacrifices color information to produce a clear picture with less light.

- **Auto Mode** - The camera will determine when the light levels require a switch.



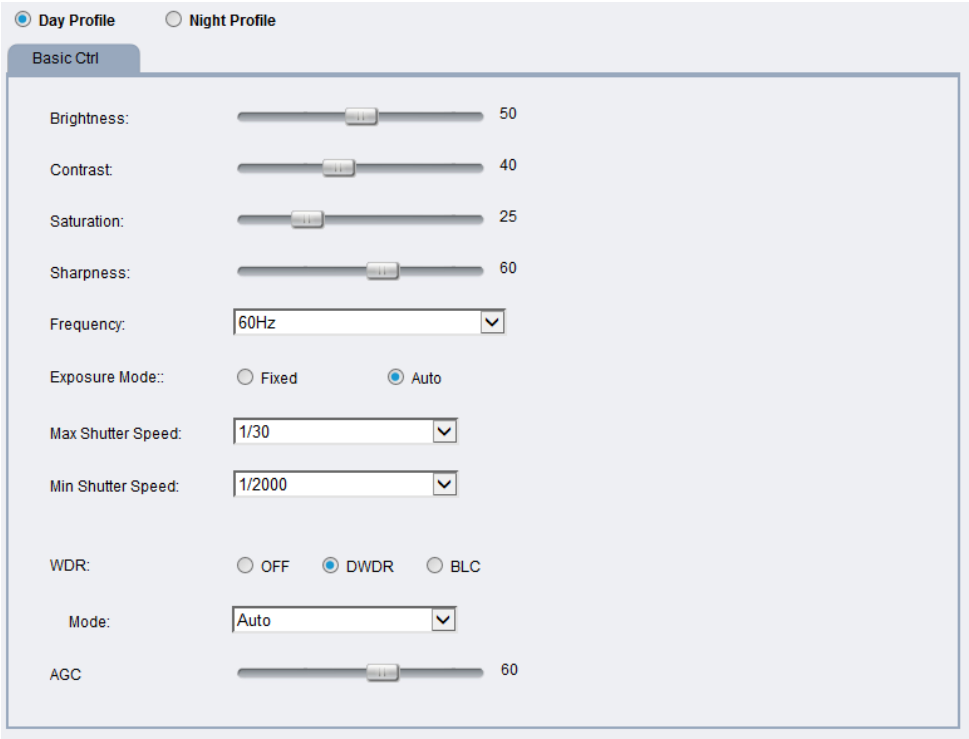

  - **Sensor Type** – select Light Sensor or Image Sensor
  - **Night Threshold** -Once selected, the camera will switch to night mode. Set the value in 0~255.
  - **Day Threshold -** Once selected, the camera will switch to day mode. Set the value in 0~255.
  - **Focus Value Display** – On/Off
  - **Dead Pixel Correction** – On/Off

- **Day mode** - Forces day mode.




  - **Chroma Suppress** - Reduces the false color phenomena.
  - **Suppress Level**
  - **Suppress Start**
  - **Suppress End**
  - **Focus Value Display** - On/Off
  - **Dead Pixel Correction** - On/Off

- **Day Profile**

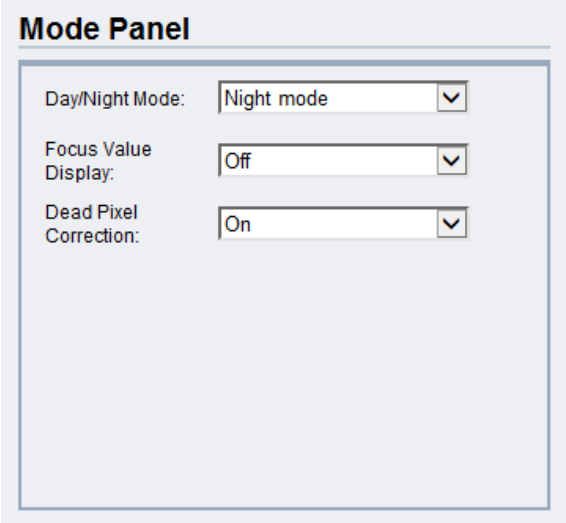


- **Brightness** - Adjusts the perceived light intensity of the image.

**Note:** In certain situations, the sensor may experience banding issues. In these cases, please raise the brightness.

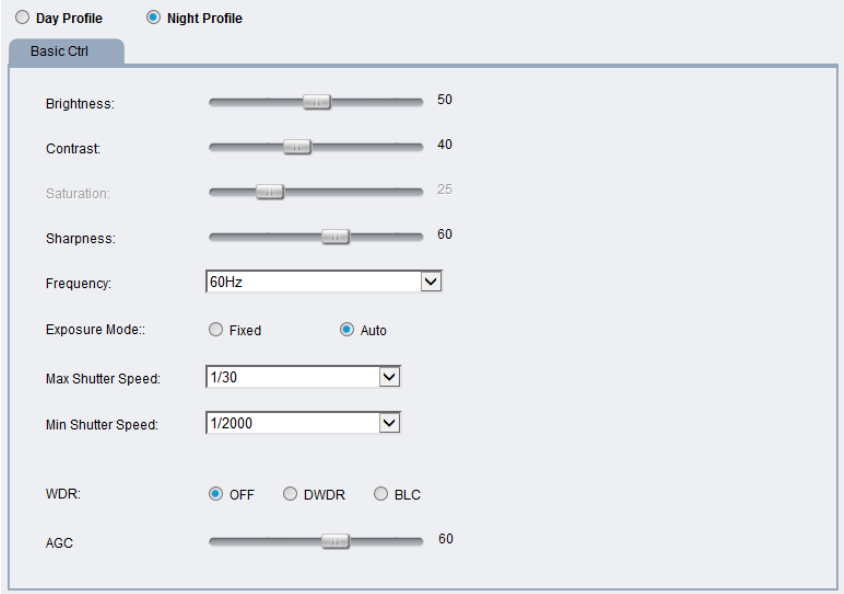
- **Contrast -** Adjusts the overall difference in the light vs. dark areas.
- **Saturation -** Adjusts the colorfulness of a color relative to its own brightness.
- **Sharpness** - Adjusts the edge contrast of the image.
- **Frequency** - The user can choose to compensate for 50Hz or 60Hz lighting.
- **Exposure Mode** – Fixed/Auto
- **Max Shutter Speed** – The user may choose the following shutter speeds: 1/1s ~ 1/1000000s.
- **Min Shutter Speed** –The user may choose the following shutter speeds: 1/1s ~ 1/1000000s.
- **WDR** – Off /DWDR (Digital Wide Dynamic Range) /BLC(Backlight Compensation) / HDR (High Wide Dynamic Range, for CAM2441P only)
- **Auto Iris** – On/Off
- **AGC**- Automatic gain control (AGC) adjusts the video gain level to a variety of inputs. This setting provides a baseline value for the AGC. Values higher than this will be darkened, and values that are lower will be brightened. AGC should be adjusted so that the area of interest is best lit.

- **Night mode** - Forces night mode.




  - **Focus Value Display** – On/Off
  - **Dead Pixel Correction** – On/Off

- **Night Profile**

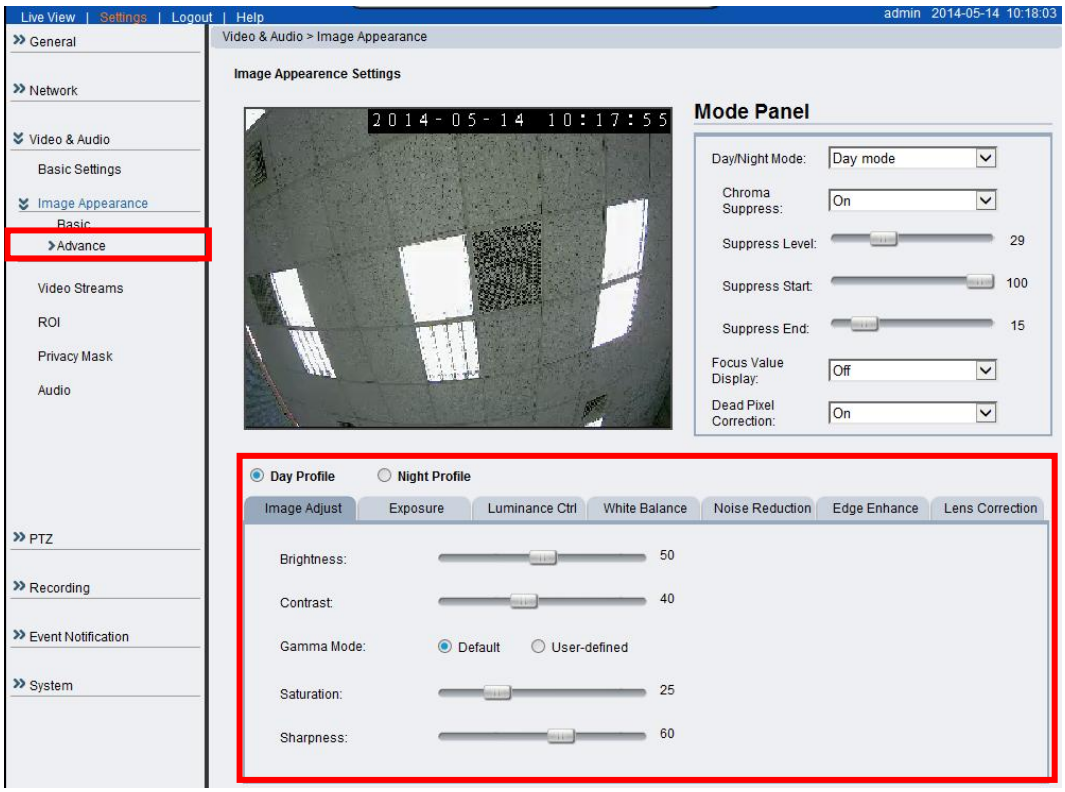



  - **Brightness** - Adjusts the perceived light intensity of the image.

**Note:** In certain situations, the sensor may experience banding issues. In these cases, please raise the brightness.

- **Contrast –** Adjusts the overall difference in the light vs. dark areas.
- **Saturation –** Adjusts the colorfulness of a color relative to its own brightness.
- **Sharpness** - Adjusts the edge contrast of the image.
- **Frequency** - The user can choose to compensate for 50Hz or 60Hz lighting.
- **Exposure Mode** – Fixed/Auto
- **Max Shutter Speed** – The user may choose the following shutter speeds: 1/1s ~ 1/1000000s.
- **Min Shutter Speed** –The user may choose the following shutter speeds: 1/1s ~ 1/1000000s.
- **WDR** –Off /DWDR (Digital Wide Dynamic Range) /BLC(Backlight Compensation) / HDR (High Wide Dynamic Range, for CAM2441P only)
- **Auto Iris** – On/Off
- **AGC**- Automatic gain control (AGC) adjusts the video gain level to a variety of inputs. This setting provides a baseline value for the AGC. Values higher than this will be darkened, and values that are lower will be brightened. AGC should be adjusted so that the area of interest is best lit.

## Advanced Day Profile/Night Profile




The parameters deal with the image lighting and color. Dragging the slider to increase and lower the value. The adjustments will be shown in the preview window.

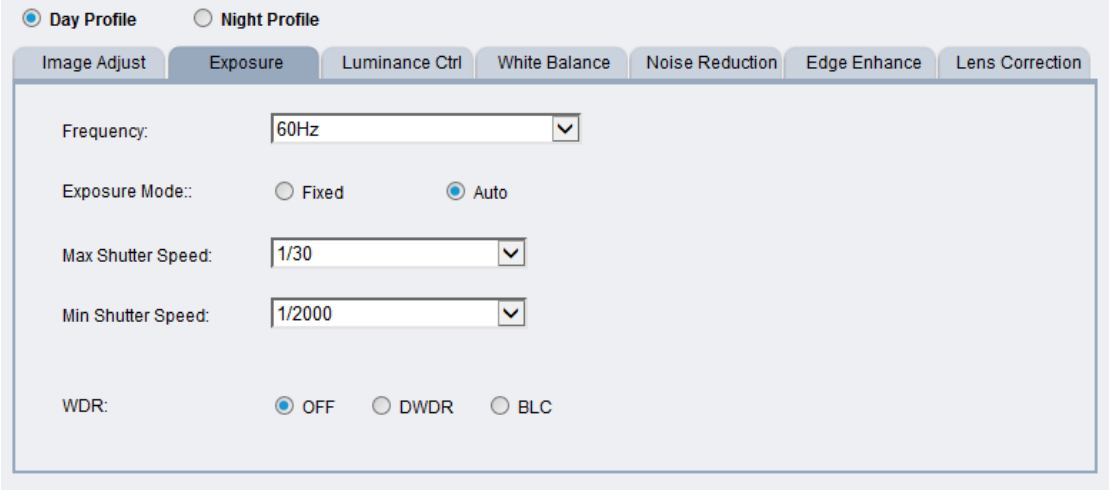
### Image Adjust

- **Brightness** - Adjusts the perceived light intensity of the image.

**Note:** In certain situations, the sensor may experience banding issues. In these cases, please raise the brightness.

- **Contrast** - Adjusts the overall difference in the light vs dark areas.
- **Gamma** – Adjusts the color error of the image.
- **Saturation** - Adjusts the colorfulness of a color relative to its own brightness.
- **Sharpness** - Adjusts the edge contrast of the image.

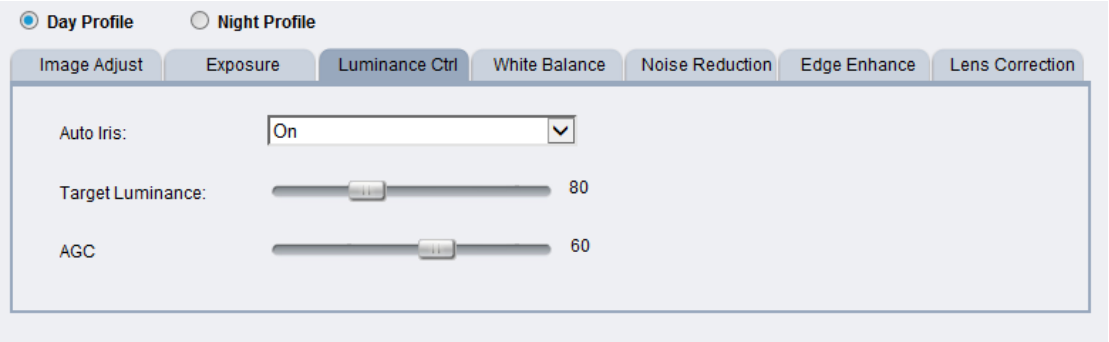
## Exposure




The parameters deal with the image lighting and color. Dragging the slider to increase and lower the value. The adjustments will be shown in the preview window.

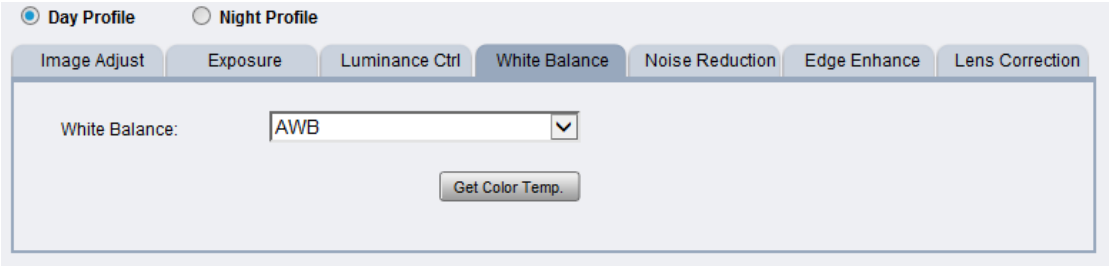
- **Frequency** –Reduces flickering caused by the difference in frequency of the system and the environment lighting. The user can choose to compensate for a 50Hz or 60Hz lighting.
- **Exposure Mode** –Sets how the camera captures images. Longer shutter times allow more light into the sensor, resulting in a cleaner picture, however longer shutter times can result in motion blur.
    - **Fixed**
    - **Auto** –The camera will automatically change the shutter speed and gain balance between image quality and frame rate when there is insufficient light to preserve both.
- **Max Shutter Speed** –Can be selected from 1/1 to 1/1000000.
- **Min Shutter Speed** –Can be selected from 1/1 to 1/1000000.
- **WDR** – Can be set as off to disable this functionality, set as DWDR BLC or HDR (for CAM2441P only) to enable the functionalities.

## Luminance Ctrl




- **Auto Iris** - On/Off
- **Target Luminance** - Adjusts the lightness of the image.
- **AGC** - Automatic gain control (AGC) adjusts the video gain level to a variety of inputs. This setting provides a baseline value for the AGC. Values higher than this will be darkened, and values that are lower will be brightened. AGC should be adjusted so that the area of interest is best lit.

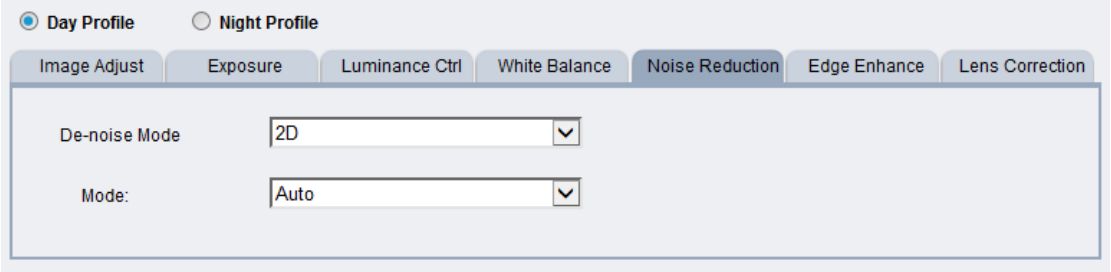
## White Balance




This setting allows users to choose the color balancing method used.

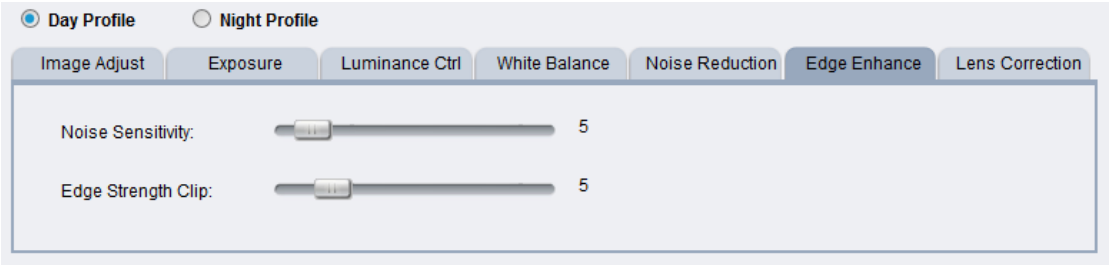
- **AWB** - Automatically chooses white level.
- **MWB** - The user must specify the red and blue gain levels to achieve the correct white level.

## Noise Reduction



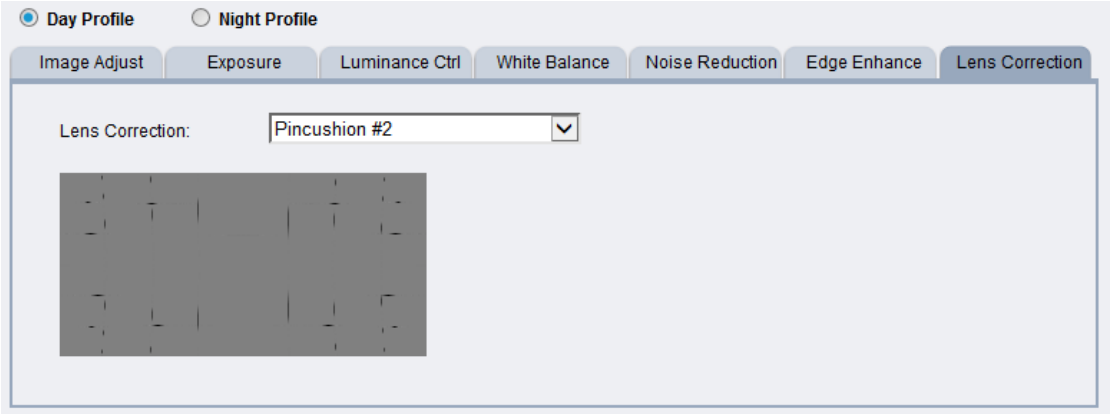

- **De-noise Mode** – Removes video noises.
    - **OFF** - Can be set to disable this functionality
    - **2DNR** – Reduces noises.
    - **3DNR** – Reduces noises in low light conditions and even with moving objects.
    - **BLEND** – Blends 2DNR and 3DNR to create clear images.
- **Mode** – Auto/Manual

## Edge Enhance



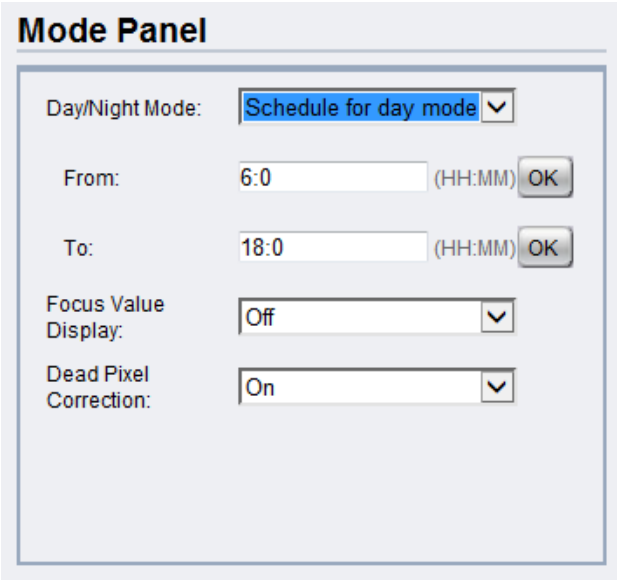

- **Noise Sensitivity** – Senses the noise.
- **Edge Strength Clip** – Enhances the edges of the image.

## Lens Correction



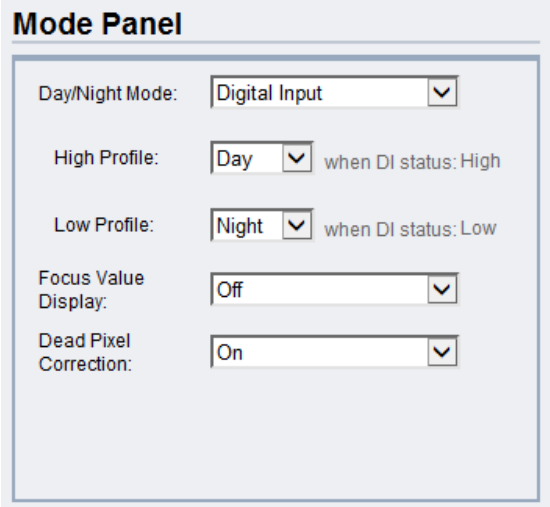

Correct the barrel distortions and pincushion distortions of images while using wide-angle lenses.

- **Schedule for day mode** - Allows the user to set a time for day/night transitions.




  - **From:** - The time, in hours and minutes, when the camera will be in day mode.
  - **To:** - The time, in hours and minutes, when the camera will switch to night mode.
  - **Focus Value Display** – On/Off
  - **Dead Pixel Correction** – On/Off

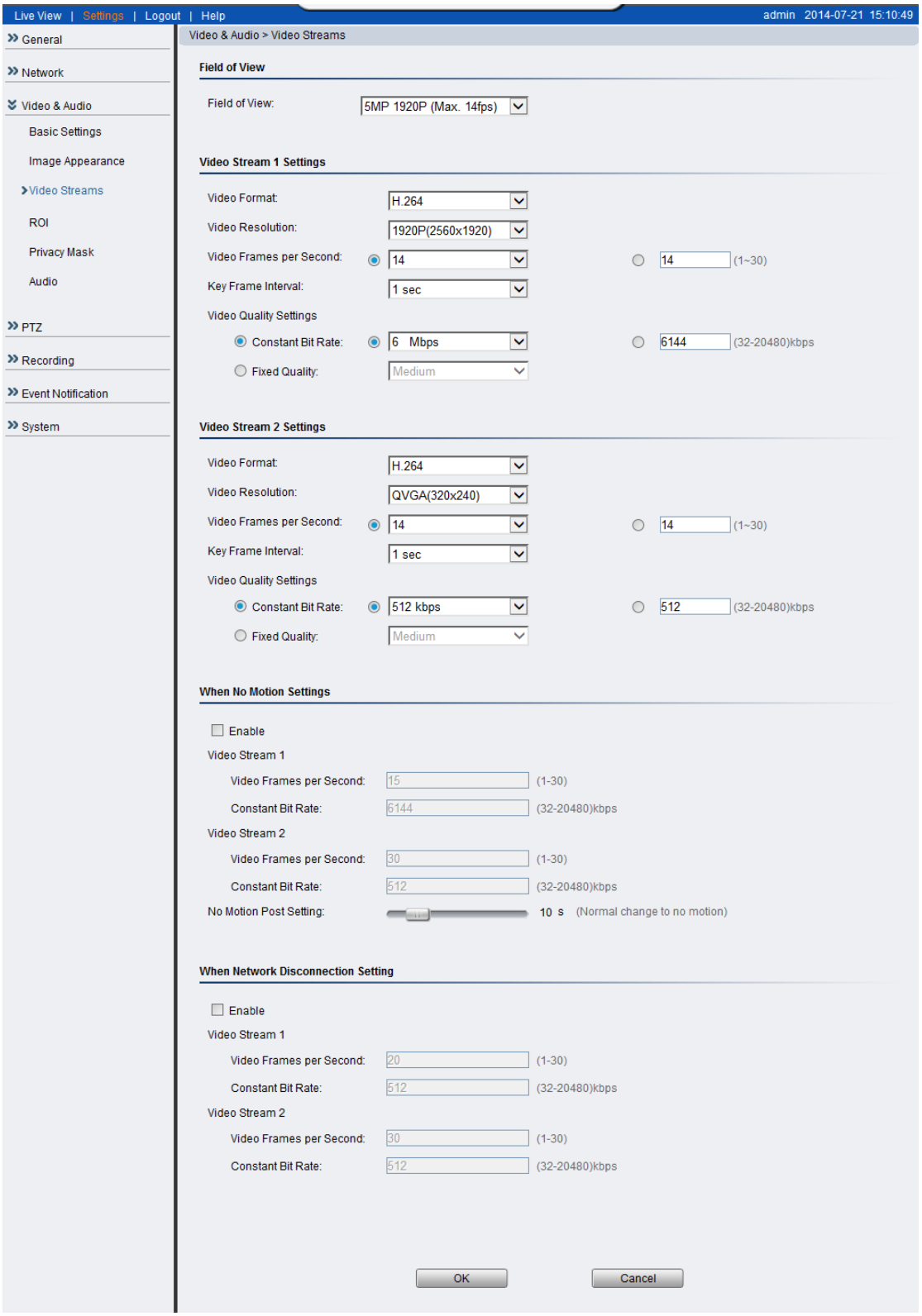
- **Digital Input** - The Camera automatically removes the IR cut filter when DI triggers.




  - **High Profile -** Day/Night.
  - **Low Profile** - Day/Night.
  - **Focus Value Display** – On/Off
  - **Dead Pixel Correction** – On/Off

## Video Streams

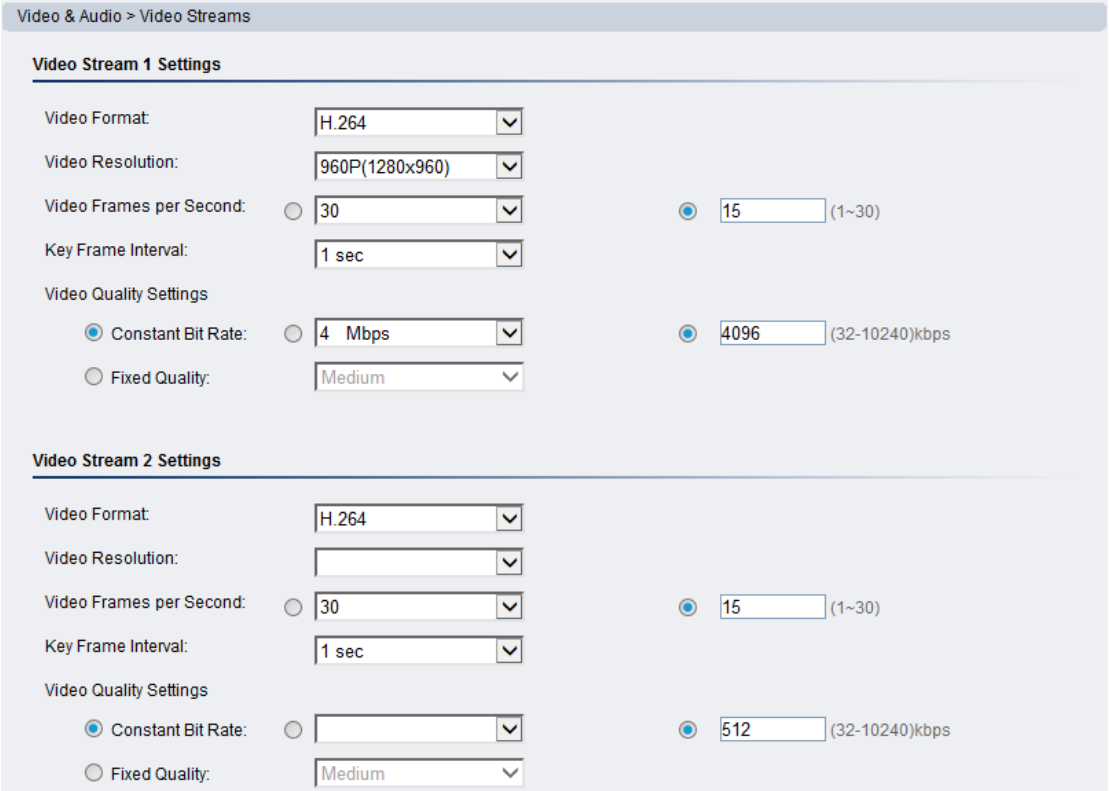
The configuration for video streams, including resolution, frame rate and image quality parameters can be found under **Video & Audio > Video Streams.**



**Field of View (FoV)**

FoV can be defined as the width and height of a scene to be monitored. Different Fields of Views are available for selection, 5MP 1920P (Max. 14fps, for CAM2511 / 2511SC only), 3MP 1536P (Max. 21fps, for CAM2511 / 2511SC / 2441 only), Full HD 1080P (Max. 30fps).

The page is split into settings for 2 streams. Common settings are:

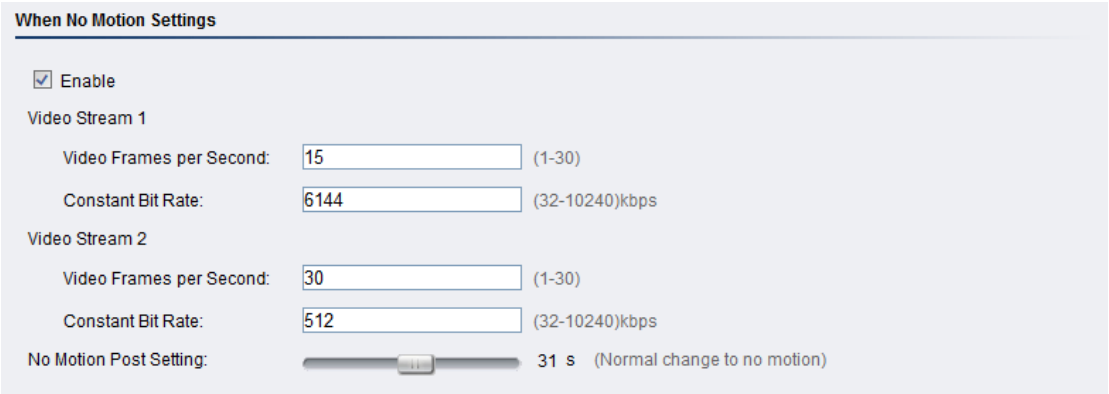



- **Video format** - The compression format for the video stream.
    - **H.264** - Provides the best compression, and clear picture, but is processor intensive.
    - **MPEG4** - Provides more compression that MJPEG, but loses picture quality.
    - **MJPEG** - Provides minimal compression, with the best picture quality. Each frame is stored as a discrete JPEG. This option is only available in Stream 1.
- **Video Resolution** – Sets the resolution of the video output. The following options are available: QSXGA (2560x1920, Stream 1 only), QXGA (2048x1536, Stream 1 only), 1080P (1920 x 1080, Stream 1 only), SXGA (1280 x 1024, Stream 1 only), 960P (1280x960, Stream 1 only),

720P (1280 x 720), D1 (720x480), VGA (640x480), QVGA (320x240, Stream 2 only).

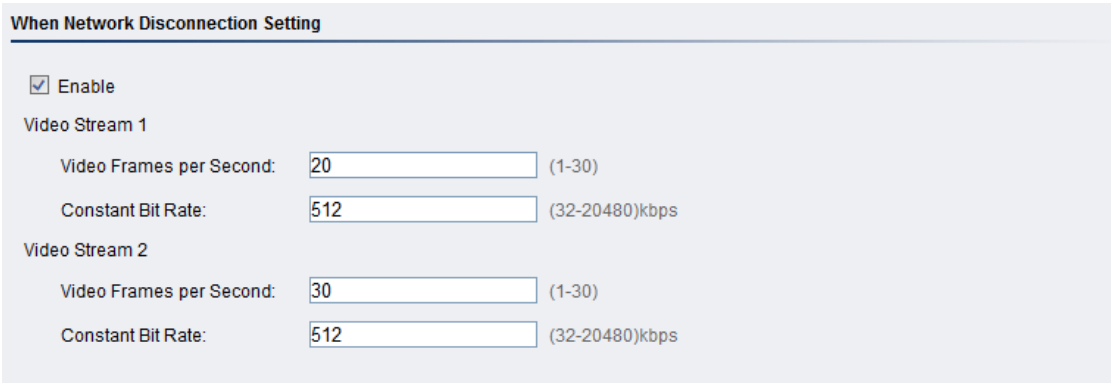
- **Video Frames per Second** - Sets the number of frames per second. 1, 3, 5, 10, 15, 20, 25, 30 FPS are possible values. You can also choose to type in the values you want (the range is from 1~30).
- **Key Frame Interval** - Sets the period between minimally compressed recovery frames that don't require other video frames to decode. 1/4s, 1/2s, 1s, 2s, 3s, and 4s are possible values.
- **Video Quality Settings** - Sets the quality of the video image.
    - **Constant Bit Rate** - In this mode, the camera will maintain a constant bit rate output, regardless of video quality. Bit rates available are dependent on the video resolution chosen, and range from 32 kbps to 10 Mbps. You can also choose to type in the values you want (the range is from 32~10240).
    - **Fixed quality** - In this mode, the camera will attempt to maintain a constant quality output, up to a maximum bandwidth of 10 Mbps.

**Settings can be further defined when no motions occur.**

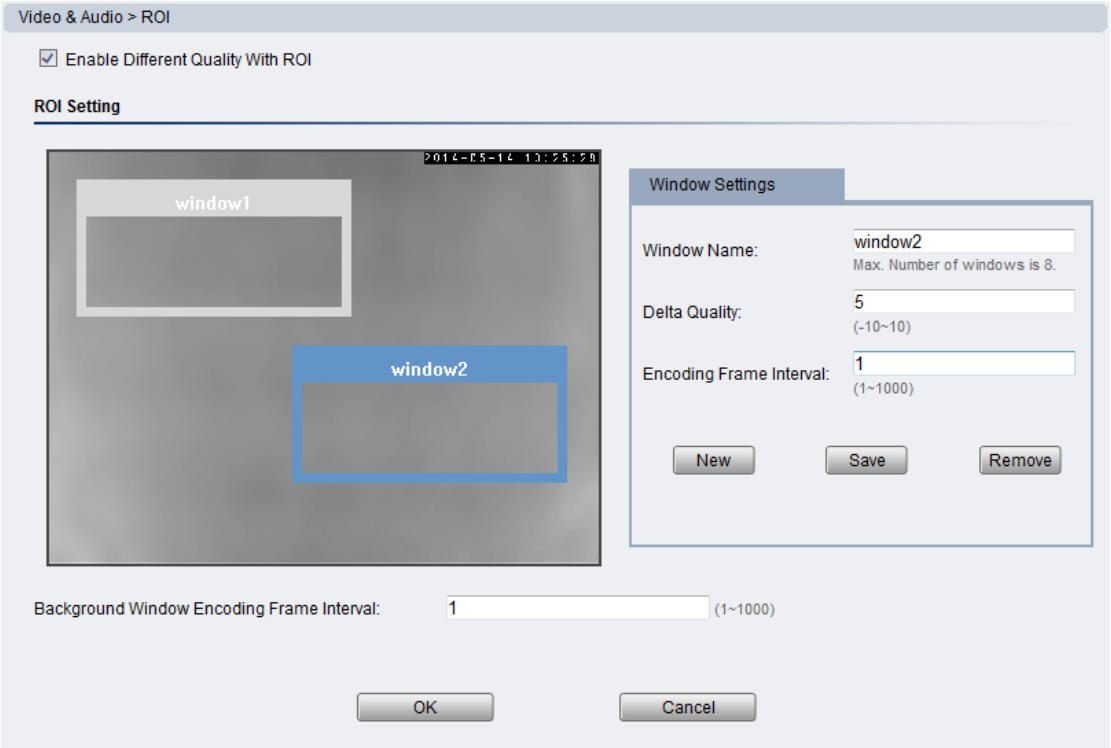



**Settings can be further defined when the network disconnection occur.**

Enable this option to adjust the Video Frames, Constant Bit Rate for Video Stream 1 and 2.


When Network Disconnection Setting
Enable
Video Stream 1
Video Frames per Second:
20
(1-30)
Constant Bit Rate:
512
(32-20480)kbps
Video Stream 2
Video Frames per Second:
30
(1-30)
Constant Bit Rate:
512
(32-20480)kbps

## ROI Settings




Use the Region of Interest (ROI) to execute different functions in one image.

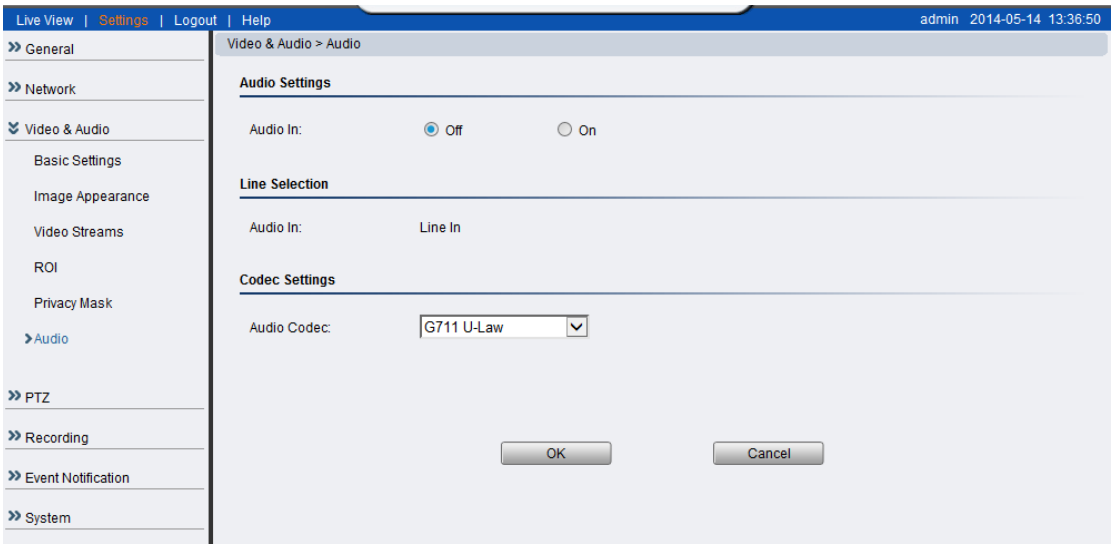
- **Window Settings**
    - **Window Name** - Specify a name for a different window.
    - **Delta Quality** – Can be selected from -10 to +10.
    - **Encoding Frame interval** – Can be selected from 1 to 1000.
- **Background Window Encoding Frame Interval** – Can be selected from 1 to 1000.

## Privacy Mask Setting

Use **New** button to create privacy mask on the video, up to 3 masks can be created. The window name and the mask color can be further defined.

## Audio Settings

The audio settings, under **Video & Audio > Audio Settings**, contain parameters dealing with audio coming from the cameras built in mic, or an external microphone.



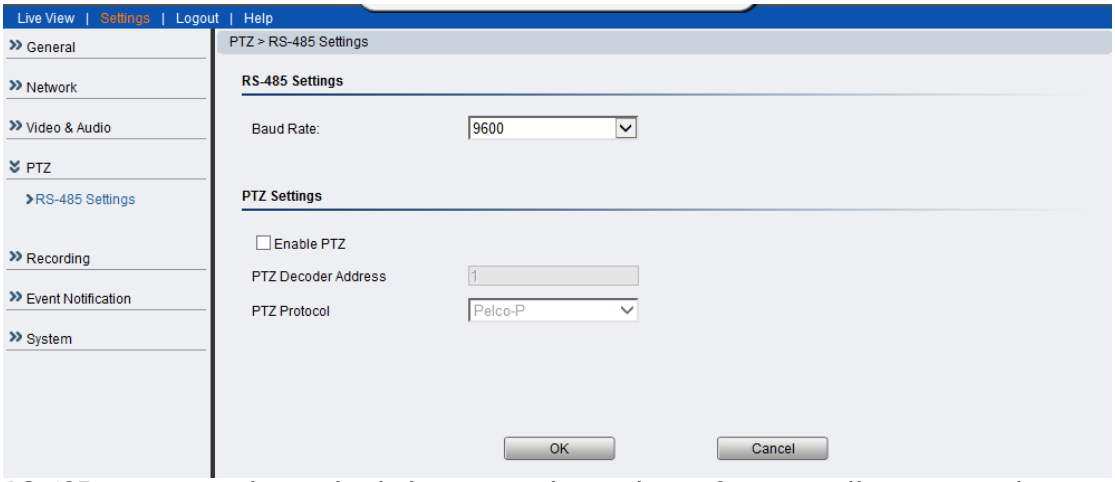

- **Mute** - Selects whether or not to mute the incoming audio from the camera.
- **Audio In** - Selects the source for the camera audio feed. **Line In,** an external source connected to the camera's line-in port, is the only option.

**Note:** For models with built-in microphone, Microphone option can be selected in *Line Selection*.

- **Audio Codec** – G.711 U-law, G.711 A-law, and ADPCM are methods for digitally encoding audio signals. Only one bit rate, 32 Kbps, is currently supported. Audio will be encoded at this bit rate.

Click **OK** to save or **Cancel** to abort the changes before you leave the page.

# PTZ




RS-485 is a control standard that is used as a basis for controlling point-tilt-zoom (PTZ) cameras or mounts. The PTZ menu **Settings > PTZ > RS-485 Settings** allows configuration of the RS-485 controls.

The following parameters are configurable:

- **Baud rate** - The baud rate to be used with the RS-485 device. Options are 2400, 4800, 9600, 19200, 11520 bd.
- **Enable PTZ** - This check box activates PTZ service, allowing PTZ controls to be displayed.
    - **PTZ decoder address** - The address of the PTZ decoder, which decodes commands and turns them into electrical signals to drive the PTZ mechanism. This address is a discreet number based on PTZ decoder's connection.
    - **PTZ protocol** - The protocol used by the PTZ. Two of the most common protocols are supported: Pelco-D and Pelco-P.

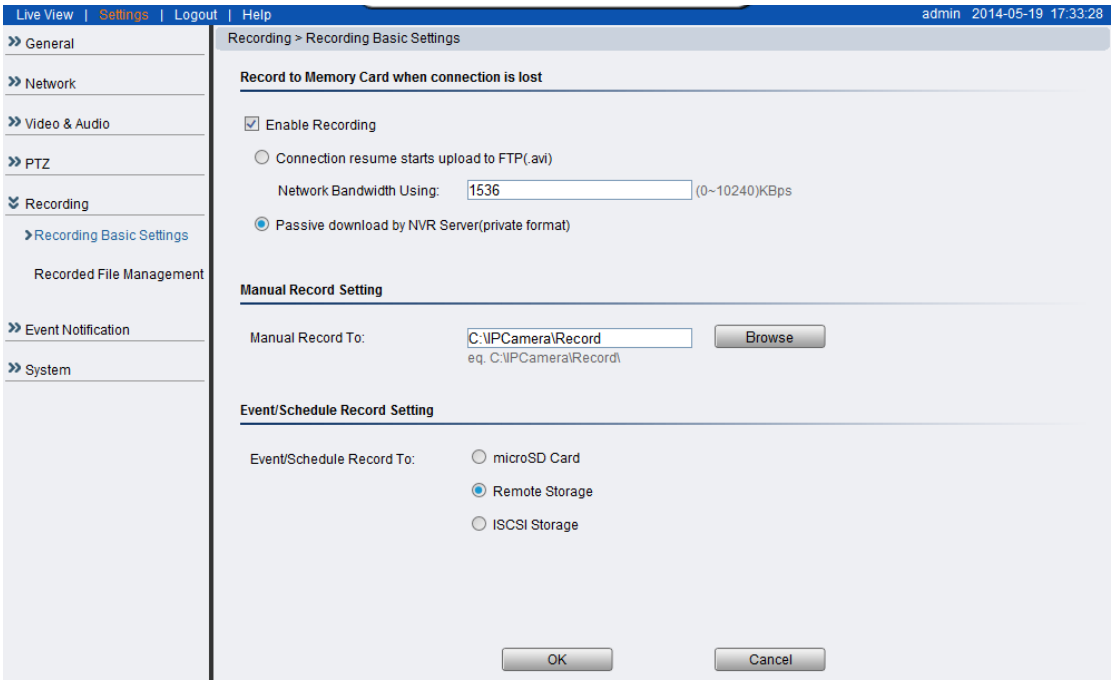
Click **OK** to save or **Cancel** to abort the changes before you leave the page.

# Recording

The Recording menu, **Settings> Recording**, deals with recording settings and managing recorded video files.

## Recording Basic Settings

Recording basic settings, **Recording > Recording Basic Settings** are parameters which deal with the recording location and scheduling.




The following parameters can be configured within this menu:

- **Record to Memory Card when connection is lost**

  When enabled, video will automatically be recorded onto the microSD card if the network connection is lost. When a network connection is re-established, recording will switch back to the remote destination. If this feature is turned off, there will be no recording at all when if network connection is lost.

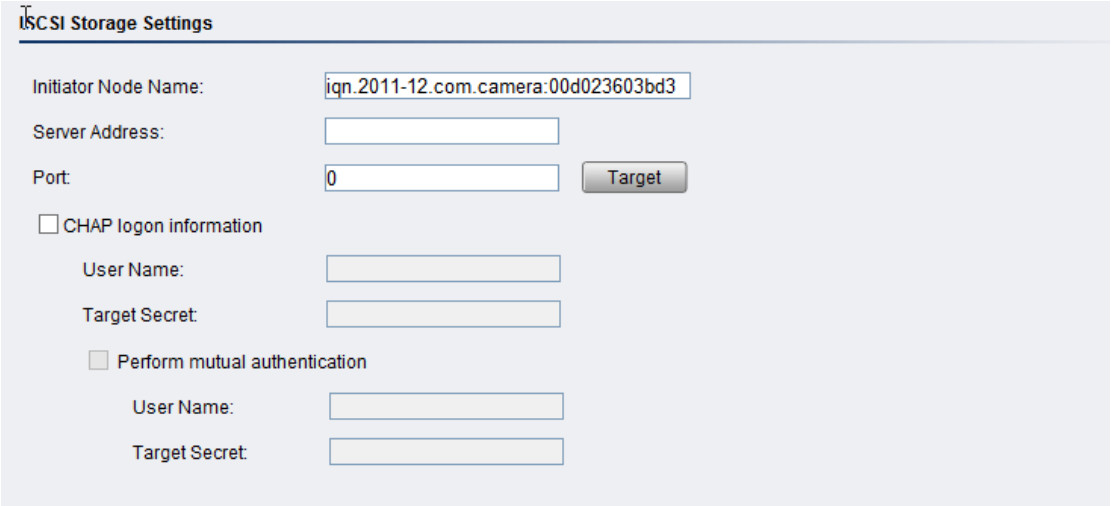
  - **Enable Recording** – Tick it if you want the video to be recorded on to the micro SD card.
  - **Connection Resume Send to FTP** - Tick **Enable Recording** if you want the video to be uploaded to FTP automatically after the network connection is recovered.

    **Network Bandwidth Using** – The speed limitation of the FTP.

- **Passive download by NVR Server (private format)**

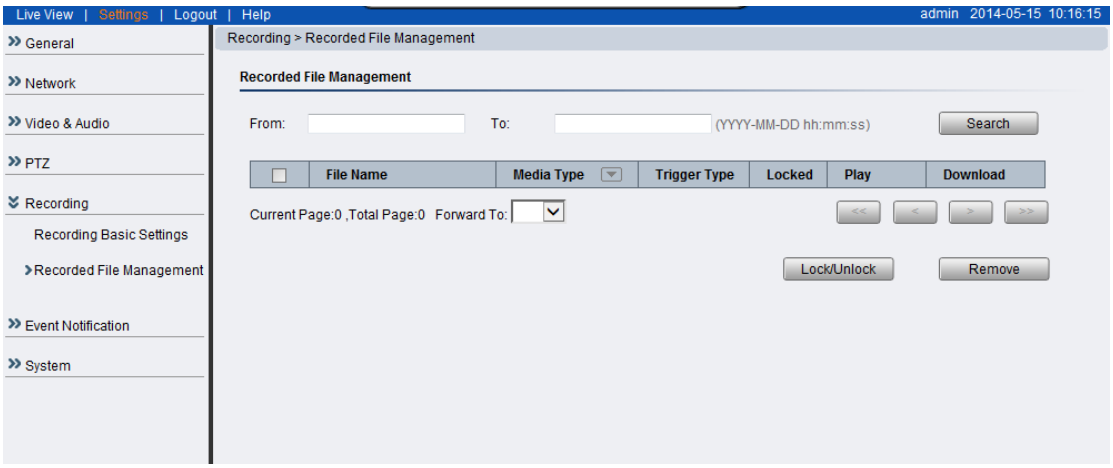
- **Manual Record Setting**
  - **Manual Record To** - Defines the path for manual recording.
  - Screenshots and image recordings will be saved in this location.

- **Event/Schedule Record Setting -** Allows users to set the destination for event or scheduled recording.
  - microSD Card
  - Remote Storage
  - ISCSI Storage - Before selecting the ISCSI Storage as your recording destination, settings of Event Server under the Event Notification should be done to enable the ISCSI Storage. Go to *Event Notification* > *Event Server* to set the ISCSI Storage Settings.




Click **OK** to save or **Cancel** to abort the changes before you leave the page.

## Recorded File Management




This section, located at **Recording > Recorded File Management** allows users to manage videos recorded on the microSD cards.

### Locating Video Files

To locate video files from a specific time frame, enter a begin and end time in the **From:** and **To:** fields below, and click **Search**.

Each video file will have an entry containing:

- **Time** - The time the video was recorded, also the filename of the entry: YYYY_MM_DD_HH_MM_SS.avi
- **Media Type** - The encoding/compression method
- **Trigger Type** - What type of action triggered this recording eg. if it was alarm recording or scheduled recording.
- **Locked** - The lock state of the alarm.

The video records located will be split into pages. The information on these

- << - Click to go to the first page of the recorded files list.
- < - Click to go to the previous page of the recorded files list.
- > - Click to go to the next page of the recorded files list.
- >> - Click to go to the last page of the recorded files list.
- **Forward To:** - This dropdown can be used to skip to a page number.

You may also narrow the entries displayed by clicking on the **Media Type** column. This will give you the option of choosing *All, H264, MPEG4,* or *MJPEG* types. The system will only show video files of the format selected.

### Managing Video Files

Once you have located the video files of interest you may select them by checking the box in the leftmost column of the entry. You can also select all displayed entries by checking the box in the header row.

There will be two buttons in each entry:

- **Play** - Plays the video file in local helper application.
- **Download** - Downloads video files. Select one or more video files and click **Download**; Choose location to save the video file(s) onto your local PC.

Other actions that you can perform:

- **Lock/Unlock** - Locks/Unlocks video files. Locked files cannot be removed. Select one or multiple video files and click Lock/Unlock. When a file is locked, the Locked status will display yes.
- **Remove** - Manually deletes stored video files. Select one or more video files and click **Remove** to delete the file(s).

Click **OK** to save or **Cancel** to abort the changes before you leave the page.

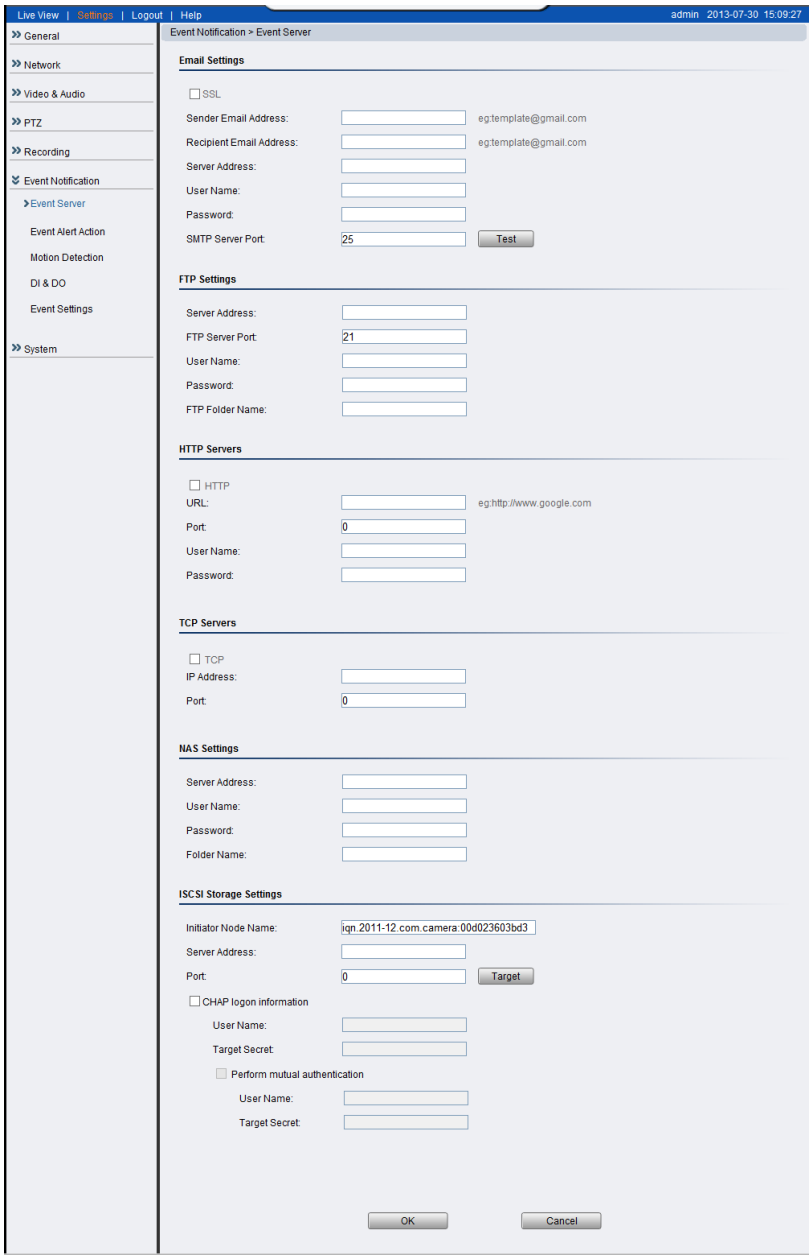
**Note:** The video files shown in Recorded File Management are files stored in the microSD card. You can also record live video by clicking the record button in the Live View screen, which will be stored directly into your local computer, and are not managed by this function. Please refer to the section on **Manual Record** for more information on this functionality.

# Event Notification

Event Notification settings, found under **Settings > Event Notification**, deal with the event detection, scheduled recording, and notification abilities of the camera.

## Event Server

The event server, which can be configured under **Event Notification > Event Server**, is the communications center of the camera. This section deals with the configuration of E-mail and FTP notifications, HTTP and TCP triggers, NAS settings and ISCSI Storage settings.



### Email Settings

Email settings are used to configure e-mail notifications.

- **Sender Email Address** – The return e-mail address for notifications. This should be your notification address.
- **Recipient email address -** The e-mail address notification emails will be sent to. Only one email address can be entered.
- **Server address** - The IP or address of the e-mail server.
- **User Name** - The user name of the notifications e-mail account.
- **Password** - The password of the e-mail account.
- **SMTP Server Port** - the SMTP port of the email server; Default 25.
- **Test** - Click this button to send a test email. E-mails will only be sent if all parameters are entered correctly.

### FTP Settings

FTP settings are used to configure recording to a remote location via the file transfer protocol.

- **Server Address** - The address of the FTP server.
- **FTP Server Port** - The port number of the FTP server; Default 21.
- **User Name** - The user name of the FTP account.
- **Password** - The password of the FTP account.
- **FTP Folder Name** - The name of the folder on the FTP site which video files will be stored in.

### Http Servers

- **URL** - The address.
- **Port** – The port number for the web service. It is usually 80.
- **User Name** - The username of the camera. **The default user name is admin**.
- **Password** - The password of the camera. **The default password is admin**.

### TCP Servers

- **IP Address** - The address of the TCP server.
- **Port** – The port number of the TCP server.

### NAS Settings

NAS settings are used to configure recording to network attached storage.

- **Server Address** - The address of the NAS server.
- **User Name** - The user name of the NAS account.
- **Password** - The password of the NAS account.
- **Folder Name** - The name of the CIFS account folder on the server.

### ISCSI Storage Settings

- **Initiator Node Name** – Your Internet Small Computer System Interface's name.
- **Server Address** – Your server address.
- **Port**
    - **CHAP logon information**

      **User Name** – Your user name.

      **Target Secret** – Created to manage the connections between an iSCSI device and the servers that need to access it.

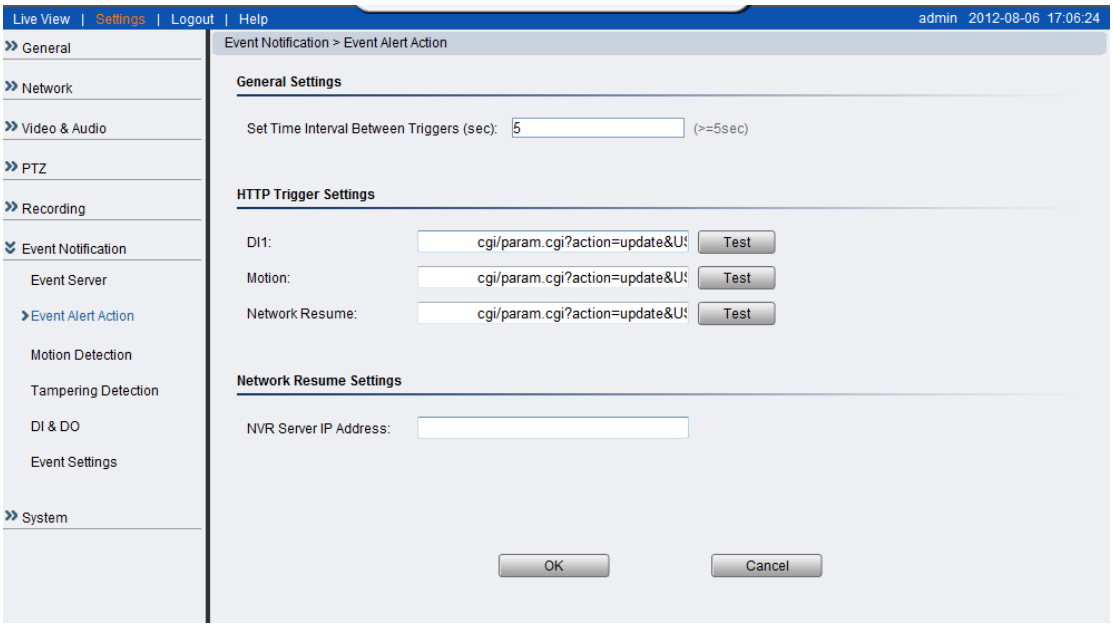
        - **Perform mutual authentication** - Two parties authenticating each other suitably.

          **User Name** – Your user name.

          **Target Secret** – Defines the portals (IP addresses) that can be used to connect to the iSCSI device, as well as the security settings that the iSCSI device requires to authenticate the servers that are requesting access to its resources.

Click **OK** to save or **Cancel** to abort the changes before you leave the page.

## Event Alert Action




## General Settings

- **Set Time Interval between Triggers (sec)**

## HTTP Trigger Settings

Set the CGI rule for HTTP triggers.

- **DI1** -/surveon-cgi/param.cgi?action=update&USER=admin&PWD=admin&System.LiveViewPor=6002.
- **DI2** -/surveon-cgi/param.cgi?action=update&USER=admin&PWD=admin&System.LiveViewPor=6002.
- **Network Resume** -

  /surveon-cgi/param.cgi?action=update&USER=admin&PWD=admin&System.LiveViewPor=6002.

## Network Resume Settings

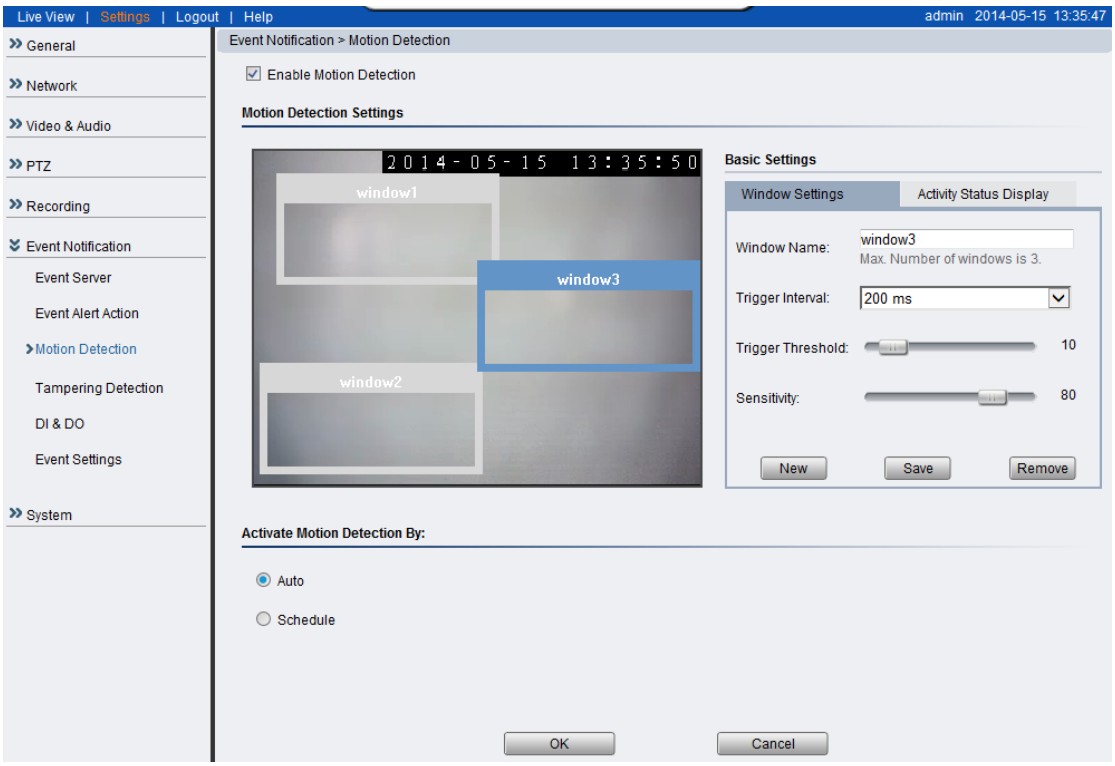
- **NVR Server IP Address** - The IP address of the NVR server.

  The system will start to ping this IP for three times, and if the results are different, the network connection will be defined as lost. The video will be recorded automatically to the micro SD card, and when the connection is recovered, it will be uploaded to the FTP.

**Note:** Please refer to Recording Basic Settings section for more details.

## Motion Detection

The motion detection functionality of the camera can be found under **Event Notification > Motion Detection**.




## Window Settings

Motion detection is activated by checking the **Enable Motion Detection** box.

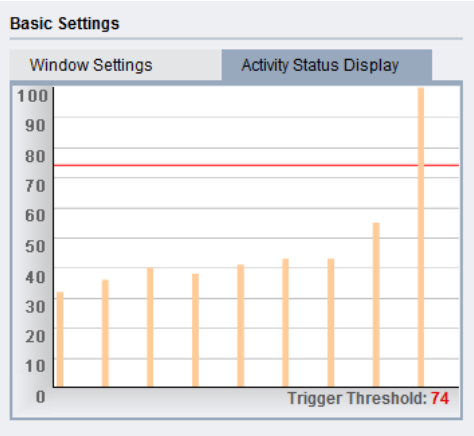
Click the *Window Settings* tab to enter the window configuration, and click **New** to add a new detection window. A maximum of 3 motion detection windows can be added. Each new window will be created with a default name *Window N*, where *N* is the number of the window. After creating the window, clicking it will select the window. You can drag and resize the window using your mouse. You can also change the following parameters:

- **Window Name** - Tthe name of the motion detection window.
- **Trigger Interval** - The time interval between motion triggers. Options available are: 200 ms , 400 ms, 800 ms, and 1000 ms.
- **Trigger Threshold** - The percentage change in the window before a motion alarm is triggered.
- **Sensitivity** - The sensitivity of the motion box.

Click **Save** to save all settings. Settings of existing windows can also be changed by selecting the window and changing the settings. To delete a window, select a window in and click **Remove**.

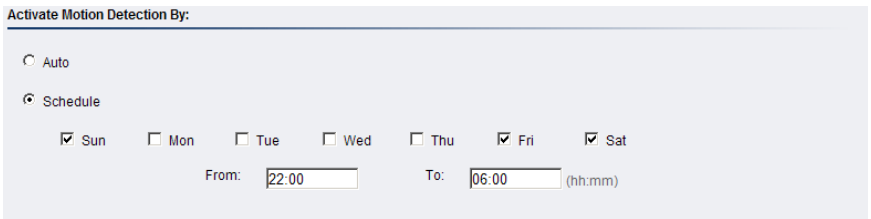
### Activity Status Display

The *Activity Status Display* tab displays the amount of motion detected in a selected window. By raising the **Sensitivity** of the window the motion values for a given motion, which are in shown in yellow, will be higher. When the motion value reaches or crosses the **Trigger Threshold,** denoted by the red line, a motion event will be triggered. Use Activity Status Display to check if the setting of threshold is reasonable. For smaller motions below the set number, the motions won't trigger alarm. Motion alarm handling and notifications can be configured under Event Settings.

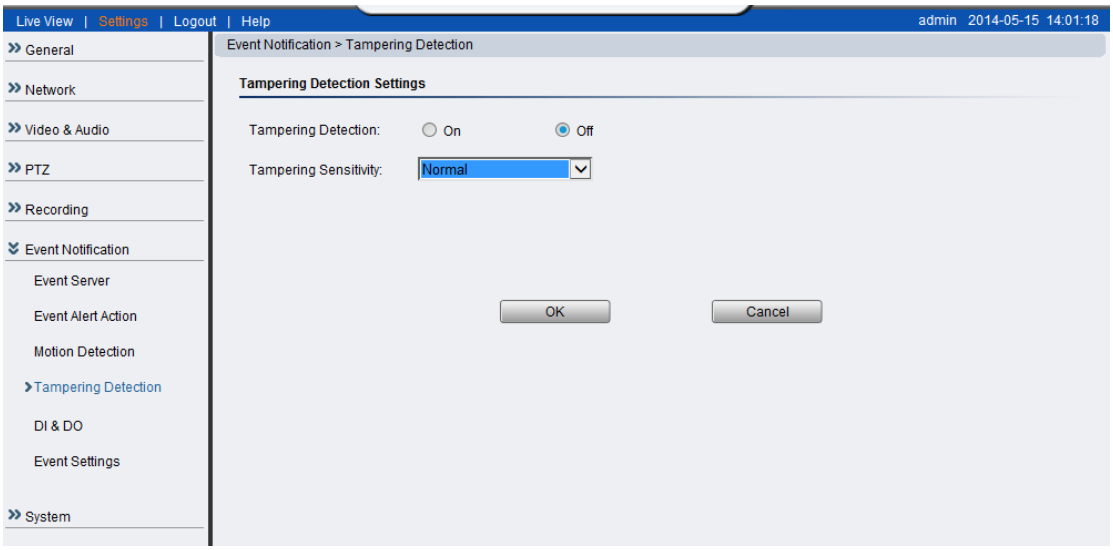



### Activate Motion Detection By: Auto/Schedule

- **Auto** - As long as **Enable Motion Detection** is checked, an event is triggered.
- **Schedule** - Selecting this option allows to manually schedule the times motion detection will be active. Select the days of the week that Motion Detection is active by checking the corresponding boxes, and fill in a start time and end time for motion detection in the **From:** and **To:** boxes.



## Tampering Detection




Tampering detection is similar to motion detection in that it detects where there is a sudden unexpected change in the whole camera view. Parameters for this feature are found under **Event Notification> Tampering Detection**.

Tampering alarm handling and notifications can be configured under Event Settings.

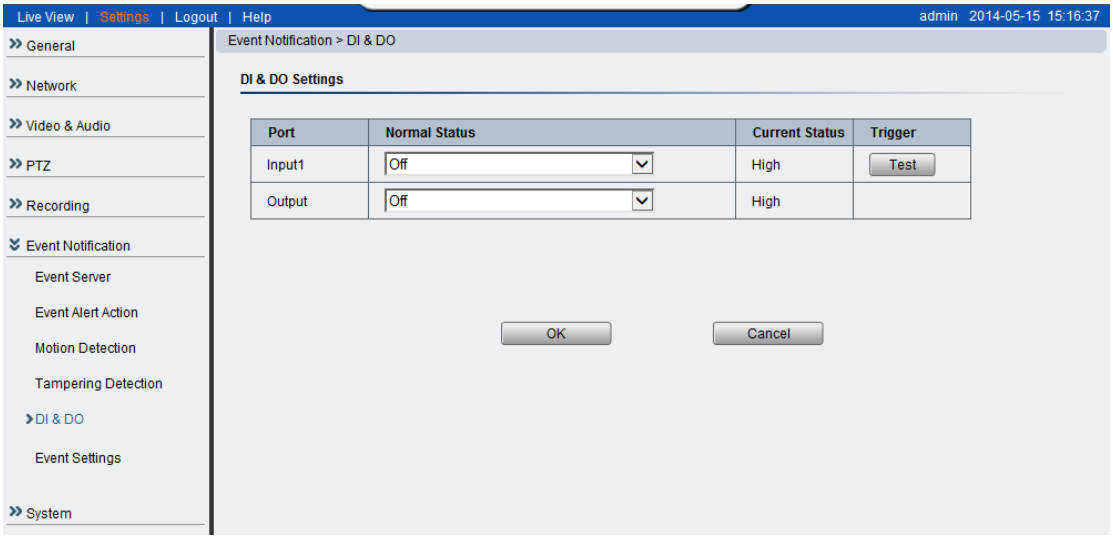
The tempering detection parameters include:

- **Tampering Detection** - Turns tampering detection on or off.
- **Tampering Sensitivity** - Sets the sensitivity of Tampering Detection. Options are *Very Low, Low, Normal, High, and Very High*. Higher sensitivities can detect more tampering attempts, but also increase the chances that the camera will produce a false alarm.

Click **OK** to save or **Cancel** to abort the changes before you leave the page.

## DI & DO

Digital Input (DI) and Digital Output (DO) stand are used for event triggering. The camera has 1 DO and 2 DI ports. Settings for these ports can be found under **Event Notification > DI & DO**. Conditions for DI and DO triggering, as well as notifications for can be set under Event Settings.

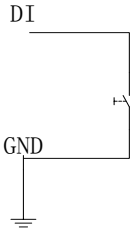



## Digital Input

The two inputs are listed as Input1 and Input2 and connect to external circuits such as window break detectors. These inputs can be tested by clicking the **Test** button in the input entry.

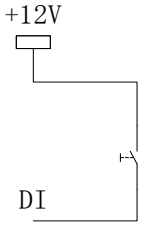
Each input has a **Normal Status**:

- **Normal Open** – the DI requires a low voltage input, with the following configuration.




It is triggered when it does not receive this input.

- **Normal Close** – the DI requires a high voltage input (+12V), with the following configuration.




It is triggered when it does not receive this input.

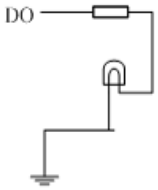
- **Off** - DI inputs are closed at all times. The camera will not respond to any signals on this DI.

### Digital Output

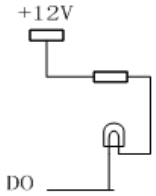
The camera can also be configured to send signals through the digital output.

Each output has a **Normal Status**:

- **High** – DO outputs a high voltage when triggered, and is connected to the output circuit in the following manner:




- **Low** - DO acts as a ground when triggered, and is connected to the output circuit in the following manner:

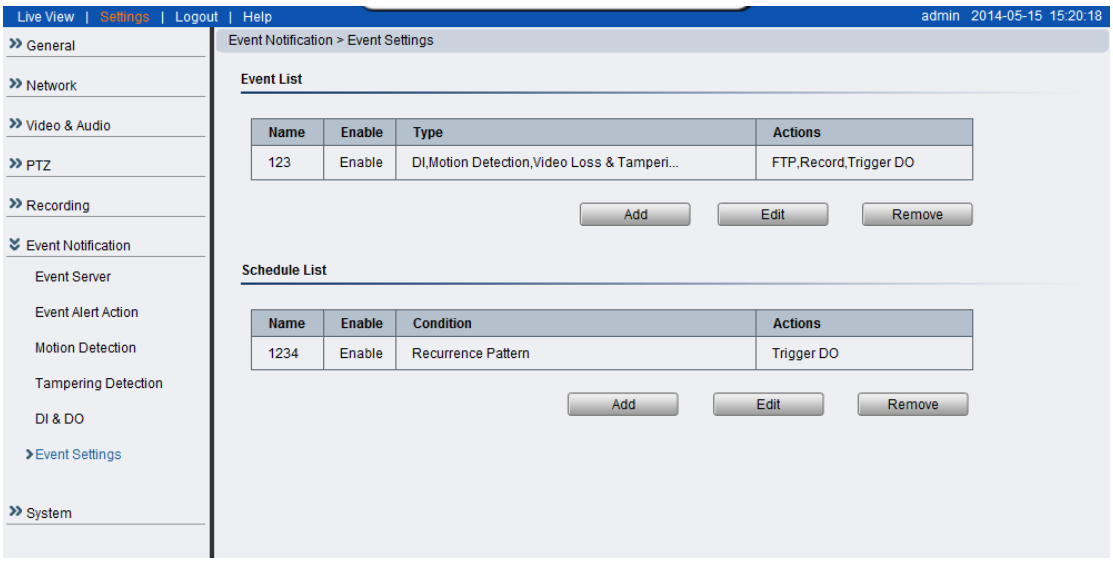



- **Off** - Closes DO output; no signals will be sent.

Click **OK** to save or **Cancel** to abort the changes before you leave the page.

## Event Settings

Event settings deal with alarm handling and notification, as well as feature scheduling. These settings can be found under the **Event Notification> Event Settings** menu.



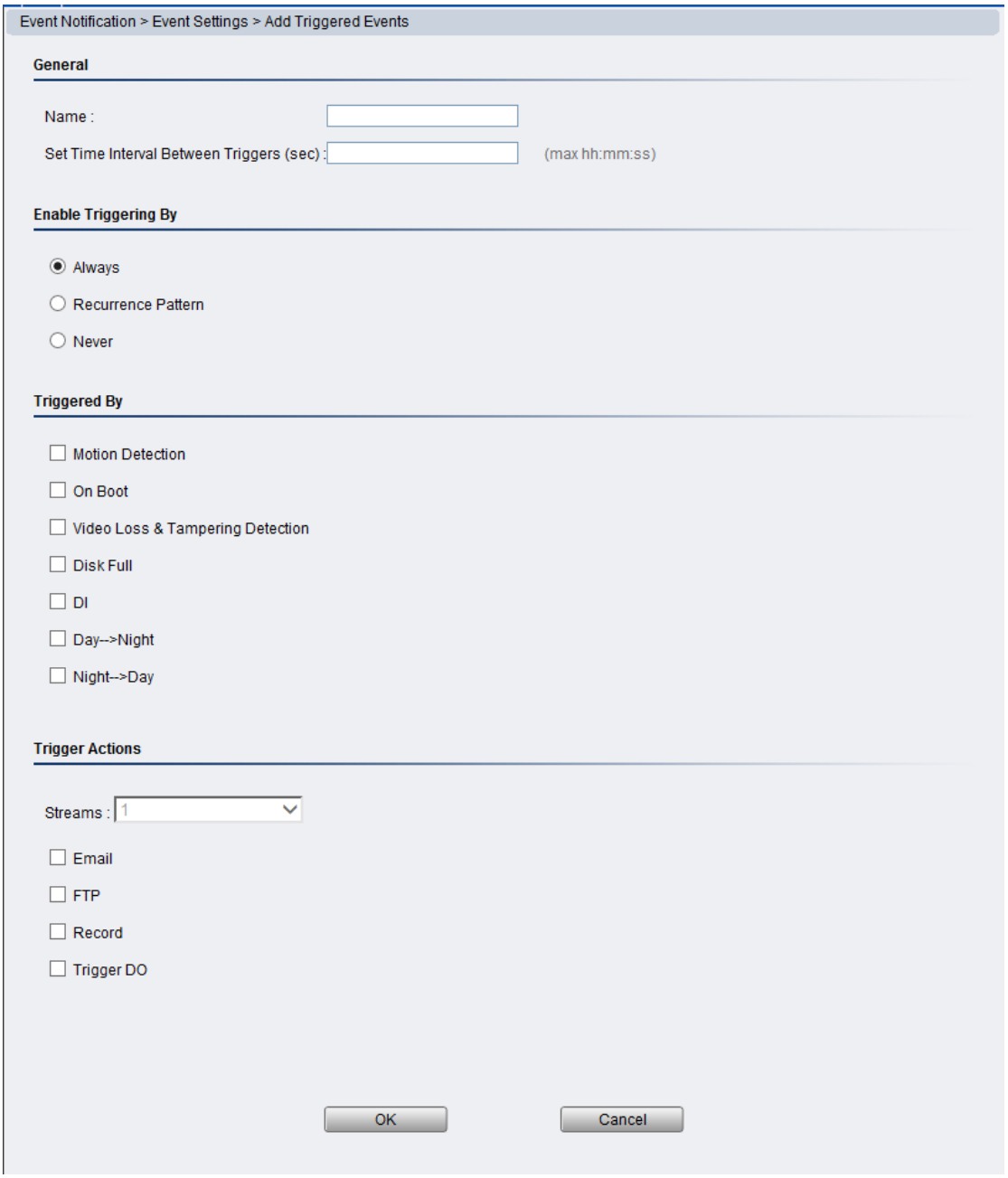

The event handler is rule based. There are lists for both two types of rules:

- **Event List** – Contains rules based on triggered events such as motion detection or DI triggers.
- **Schedule List** – Contains time-based rules.

Each rule has an action list. When the conditions for rule are met, the actions specified by the rule are carried out. Users may perform the following actions in both Event and Schedule lists:

- **Add** - Clicking on the **Add** button adds a new rule to a list.
- **Edit** - A selected rule may be edited by clicking on the **Edit** button.
- **Remove** - A selected rule may be deleted by clicking on the **Remove** button.

## Adding/Editing an Event Rule




The Add and Edit screens contain the following triggering actions:

**Note:** If editing a rule that has not been triggered, the rule will not be triggered after until after editing is complete. If the rule is triggered, any changes will not be applied until the current trigger is resolved.

### General

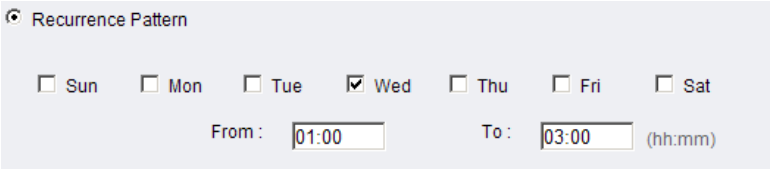
The following general fields should be filled in:

- **Name** - Specifies the name of the Event.
- **Minimum time interval between triggers** - The time frame in which a subsequent trigger of the same event will be ignored (maximum 23:59:59).

### Enable Triggering By

The next step is to specify the frequency of trigger response. 3 options are available:

- **Always** - The default setting; Triggers event when conditions are met.
- **Recurrence Pattern** - Enables triggering only if conditions are met during a specified time period. To specify the period, select the days of the week that the trigger is active by checking the corresponding boxes, and fill in a start time and end time for motion detection in the **From:** and **To:** boxes.




- **Never** – The event is never triggered.

### Triggered By

After the frequency is selected, triggering conditions can be set. Multiple conditions can be set at once. Available options include:

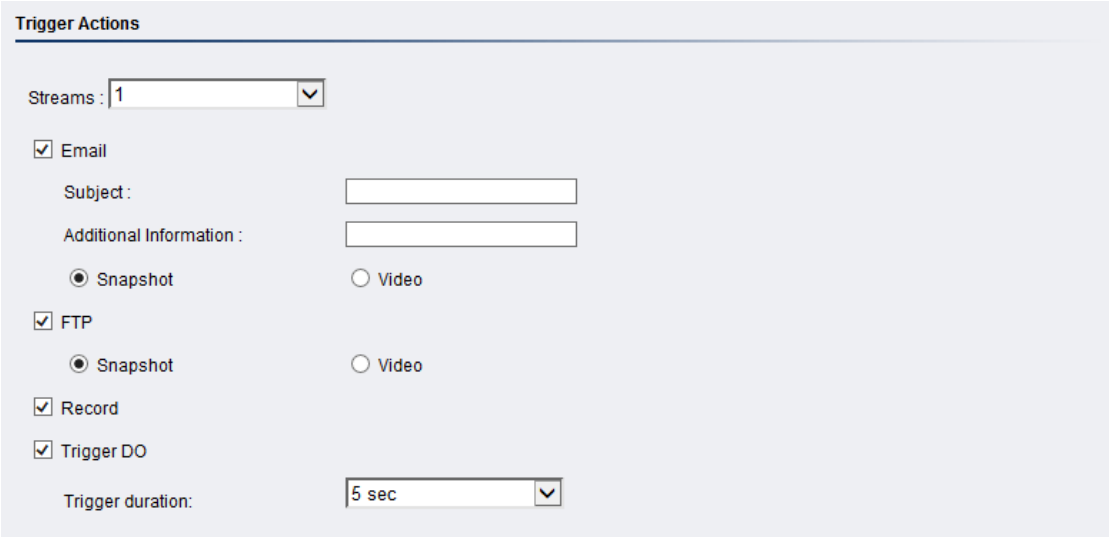
- **Motion Detection** - Trigger when motion is detected.
    - **In Window** – Specifies the detection window that will trigger the event.

  Please refer to the section on Motion Detection for details.
- **On Boot** - Trigger when camera reboots.
- **Video Loss & Tampering Detection** - Trigger when video signal is lost or tampering is detected. Please refer to the section on Tampering Detection for more detail.
- **Disk Full** - Trigger when the SD disk installed in the camera is full.

- **DI** - Trigger when a DI trigger occurs. For more information please refer to the section on DI & DO.
- **Day → Night**
- **Night → Day**

### When Triggered

The actions to take when trigger conditions are met are configured here.




The following options are available:

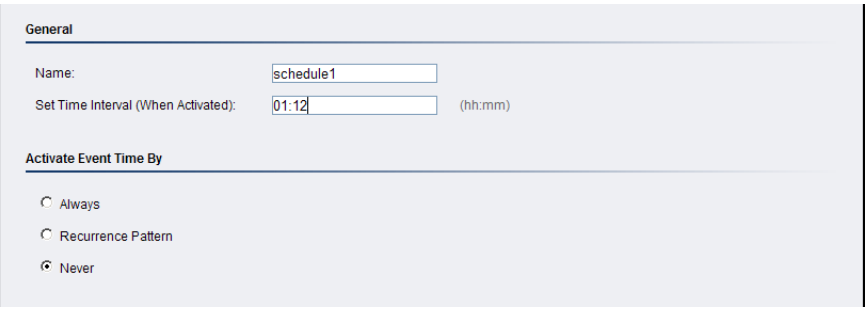
- **Streams** – Selects the stream from which the snapshot or recording will be obtained.
- **Email** – E-mails notifications to the email address specified in the Event Server settings. If this option is chosen, fill in the following:
    - **Subject** - The subject line of the notification e-mail.
    - **Additional Information** - Contents of the notification e-mail.
    - **Snapshot/Video Clip** - Choose to send a snapshot or video attachment from 5s before to 30s after the trigger.
- **FTP** - uploads a snapshot or video clip to a FTP location specified in the Event Server settings.
    - **Snapshot/Video Clip** - Choose to upload a snapshot or video file from 5 seconds before to 30 seconds after the trigger. Files are sent as attachments.

- **Record** - Records video to the server specified in the Event Server settings and the microSD card when triggered. The video clip stored on both remote storage server and local storage is a video file 35 seconds in length (5 seconds before and 30 seconds after the trigger)
- **Trigger DO** –A Digital output signal is sent when triggered.
    - **Trigger Duration** - **The** length of time that the DO signal is sent. Options are 1, 2, 5, 10, 20 or 30 seconds. For more information please refer to the section on DI & DO.

Click **OK** to save or **Cancel** to abort the changes before you leave the page.

### Adding/Editing a Scheduled Rule

The Add and Edit screens contain the following actions:




**Note:** If editing a rule that has not been triggered, the rule will not be triggered after until after editing is complete. If the rule is triggered, any changes will not be applied until the current trigger is resolved.

#### General

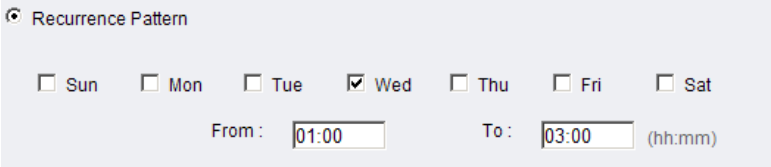
The following general fields should be filled in:

- **Name** - Specifies the name of the Event.
- **Set Time Interval (When Activated)** - The trigger time of the event (00:00 to 23:59).

### Enable Triggering By

The next step is to specify the frequency of trigger response. 3 options are available:

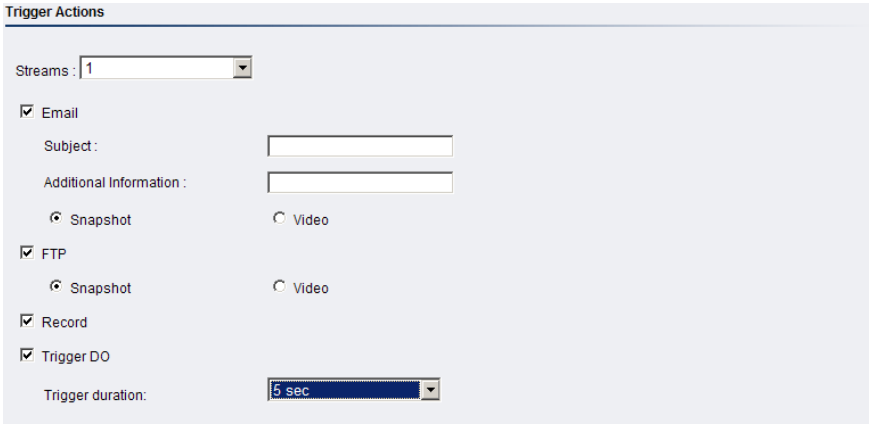
- **Always** - The default setting; Triggers event when conditions are met.
- **Recurrence Pattern** - Enables triggering only if conditions are met during a specified time period. To specify the period, select the days of the week that the trigger is active by checking the corresponding boxes, and fill in a start time and end time for motion detection in the **From:** and **To:** boxes.




- **Never** – The event is never triggered.

### When Triggered

The actions to take when trigger conditions are met are configured here.




The following options are available:

- **Streams** – Selects the stream from which the snapshot or recording will be obtained.
- **Email** – E-mails notifications to the email address specified in the Event Server settings. If this option is chosen, fill in the following:
    - **Subject** - The subject line of the notification e-mail.
    - **Additional Information** - Contents of the notification e-mail.
    - **Snapshot/Video Clip** - Choose to send a snapshot or video attachment from 5s before to 30s after the trigger.

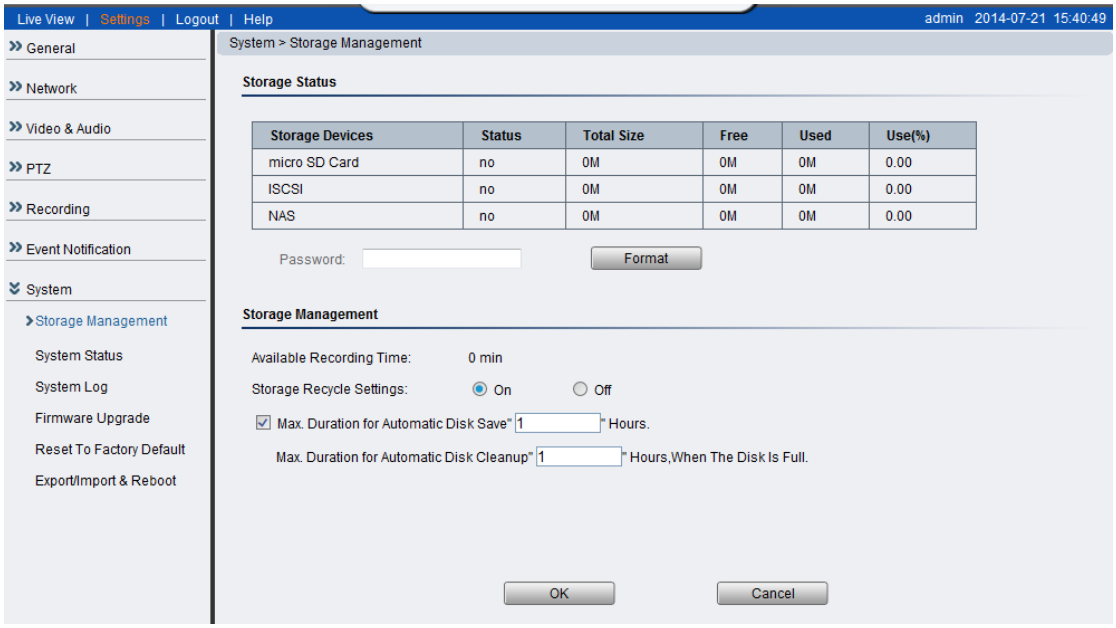
- **FTP** - uploads a snapshot or video clip to a FTP location specified in the Event Server settings.
    - **Snapshot/Video Clip** - Choose to upload a snapshot or video file from 5 seconds before to 30 seconds after the trigger. Files are sent as attachments.
- **Record** - Records video to the server specified in the Event Server settings and the microSD card when triggered. The video clip stored on both remote storage server and local storage is a video file 35 seconds in length (5 seconds before and 30 seconds after the trigger)
- **Trigger DO** –A Digital output signal is sent when triggered.
    - **Trigger Duration** - The length of time that the DO signal is sent. Options are 1, 2, 5, 10, 20 or 30 seconds. For more information please refer to the section on DI & DO.

Click **OK** to save or **Cancel** to abort the changes before you leave the page.

# System

The system settings, which deal with hardware and firmware parameters, logs, and configuration lists, can be found under **Settings > System.**

## Storage Management




MicroSD class 2/4/6 cards can be accessed for offline video storage and upgrade purposes. MicroSD installed in the camera can be managed under **System > Storage Management.**

### Storage Status

The status of the current microSD card can be obtained under *Basic Settings*:

- **Storage Devices - -micro SD Card, ISCSI, NAS**
- **Status** – If a readable card is present, this will show *ready*, otherwise *no* will be shown.
- **Total Size** – The size of the card.
- **Free** – The total space left on the card.
- **Used** – The occupied space on the card.
- **Use(%)** – The percentage of the card that has been used.
- **Format** - User may need to type in the administrator password to format the storage device.

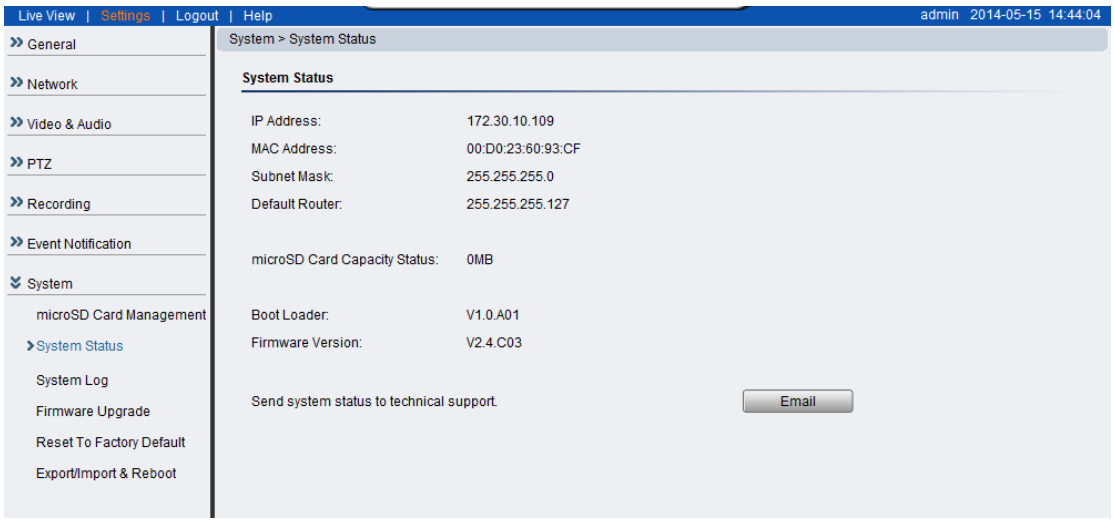
### Storage Management

- **Available Recording Time** - Calculates how much recording time is available based on current settings.
- **Storage Recycle Settings** - Turning the function On will clear the microSD card once it is full.
- **Max Duration for Automatic Disc save __ Hours** –

  If storage recycling is activated, the card will save recordings continuously. (99999 hours max.)
- **Max Duration for Automatic Disc cleanup __ days** – If storage recycling is activated, the card will be cleared when this number of days has elapsed. (100 days max. Locked files will not be cleared)

Click **OK** to save or **Cancel** to abort the changes before you leave the page.

## System Status




The camera status can be found under **System > System Status.**

This section displays useful system information including:

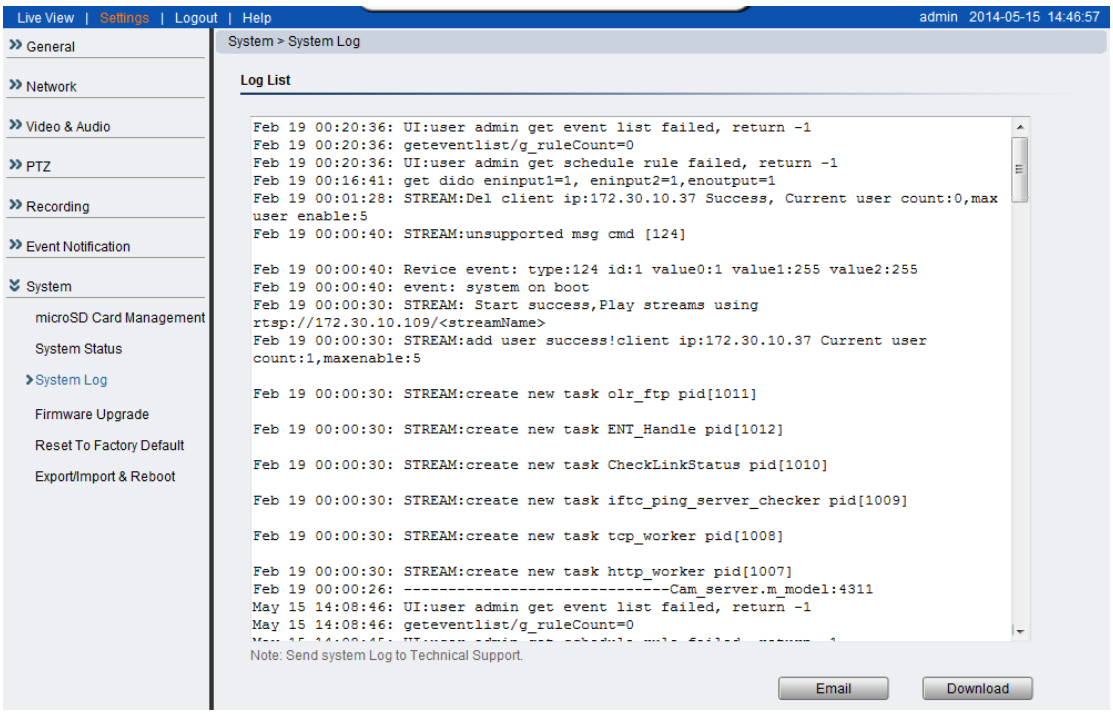
- **IP Address**
- **MAC Address**
- **Subnet Mask**
- **Default Router** address
- microSD Card Capacity Status
- **Boot Loader** Version
- **Firmware Version**

Clicking on the **Email** button will send the system status information out to the notification e-mail address specified in Event Server for troubleshooting or reference purposes.

## System Log

The system log, **System > System Log,** provides a log for system messages and events. The log lists important information such as login information, changes to camera settings (both successful and unsuccessful), triggered events, and error messages.

This information can be very useful in the event of a camera failure or unauthorized entry.

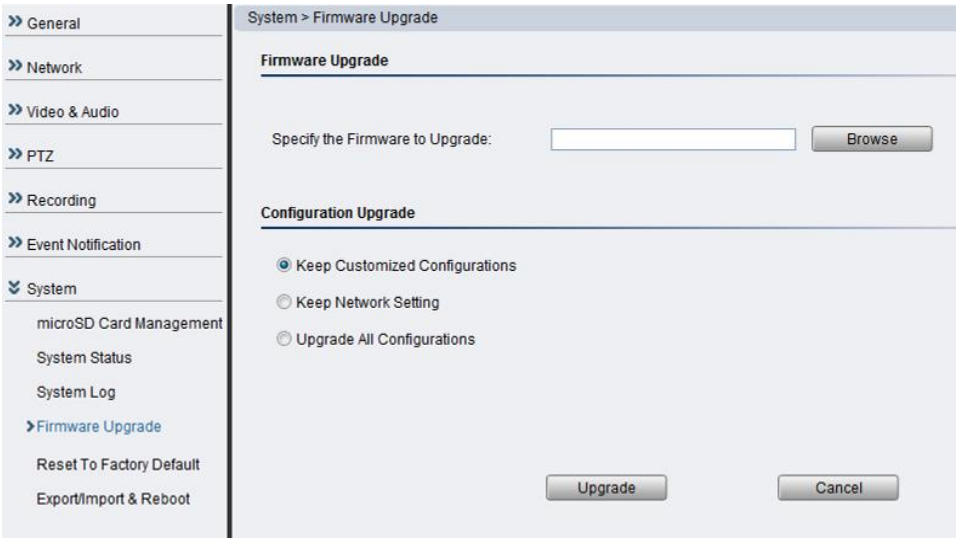



Clicking **Email** will send the log out as an email the notification e-mail address specified in Event Server; Clicking **Download** will begin the browser download process to download the log to the local PC.

## Firmware Upgrade

Upgrading with a firmware file on a PC:

1. Power ON the device.
2. Connect to the camera through a web browser and go to **System > Firmware Upgrade.**




3. Click “Browse” and locate the file [cam number]fw.

## Configuration Upgrade

- **Keep customized configuration** to keep current configuration settings.
- **Keep Network Setting** to keep current network configuration.
- **Upgrade all configurations** to clear all settings back to factory defaults.

Click **Upgrade** to start the upgrade. Upon completion of firmware upgrade, the camera will reboot (you will be logged off).

The LED will flash amber during the firmware upgrading. The camera will start reboot after firmware upgrade completed. When the LED indicator turns green, the firmware is upgraded successfully.

If the status LED shows steady amber for over 1 minute, the camera will become unresponsive and the upgrade process may have failed. Please contact with your dealer for technical support.

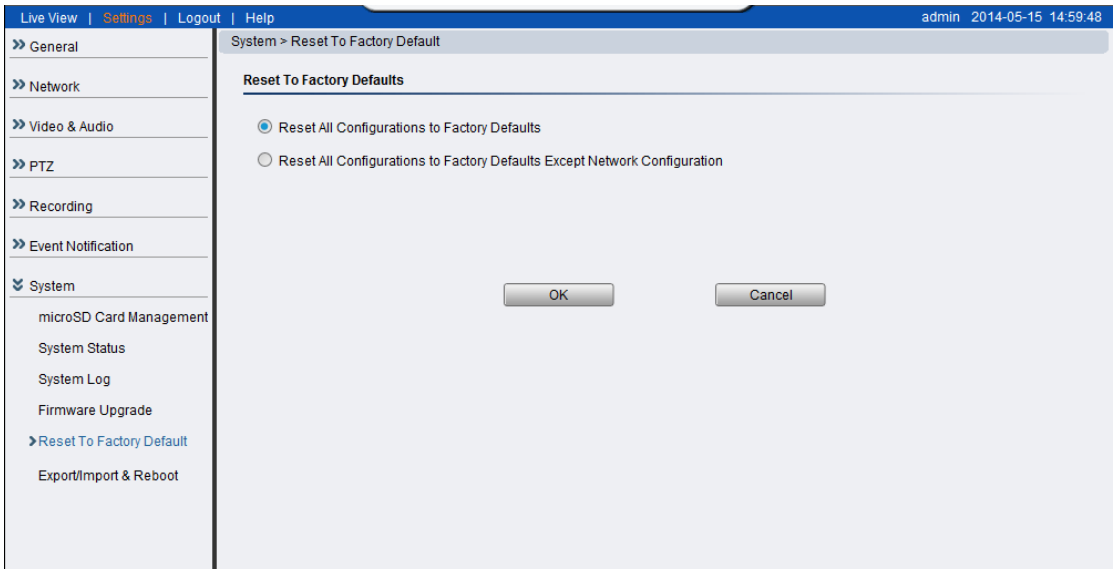
## Reset to Factory Default

To reset the device to the factory default settings:

1. Make sure the device is in operation mode.
2. Using a needle or similar object to press and hold the Reset button until the camera restarts (about 2 seconds). The status LED will change to amber during startup.
3. When the Status Indicator changes to back to Green (which may take up to 1 minute), the process is complete. The default IP address is 192.168.88.10 if not assigned by a DHCP server.

**Note:** Resetting to the factory default settings using the Reset button will cause all parameters (including the IP address) to be reset. To reset the unit without changing parameters, disconnect and reconnect the power connector.

Camera resets can also be performed under **System > Reset To Factory Default.**




There are 2 types of reset.

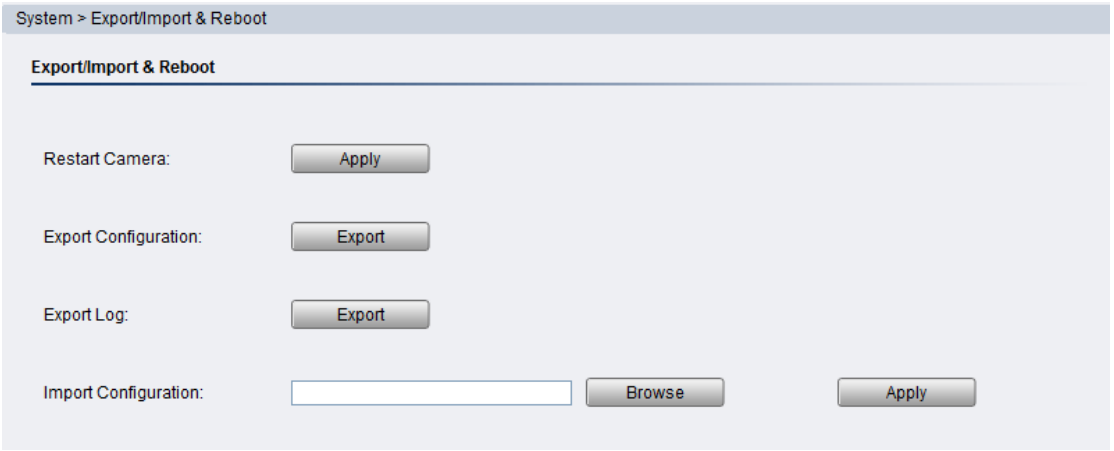
- Reset All Configurations to Factory Defaults
- Reset All Configurations to Factory Defaults Except Network Configuration.

Click **OK** after choosing a reset option to perform a reset.

Alternately, you may press the “Reset” button on the bottom of the camera to perform a complete reset of the camera (no configurations retained). To reset the camera by pressing the “Reset” button on the bottom of the camera, press and hold the “Reset” button for 3 seconds. During this time, the LED indicator in front of the camera will blink in red.

## Export/Import & Reboot

In certain situations it may be necessary to restart your network camera (network settings changed, DHCP added, etc). The settings under **System > Export/Import & Reboot** allow you to restart the camera.




This menu also contains options to export configuration details (for backup or replication purposes), as well as import configuration details. The following options are available:

- **Restart Camera** - Resets the camera when **Apply** is clicked.
- **Export Configuration** - Export the camera's settings and configurations by clicking **Export**, this will start a browser dialogue to download the configuration.
- **Export Log**
- **Import Configuration** - Imports previously exported camera settings. The field should contain the path for the camera configuration file. Click **Browse**: to browse your PC for the configuration file. Click **Apply** to import the settings.

# Chapter 5. Configuration through the IP Utility

Camera configurations can be done through web interface and IP Utility.

**For IP Utility, please look into this chapter; for web interface, please refer to Chapter 4.

| | | Web Interface | IP Utility |
|---|---|---|---|
| General | Basic Settings | V | X |
| | User Account | V | X |
| | Date & Time | V | X |
| Network | Network Configuration | V | Set IP Only |
| | Port Settings | V | X |
| | UpnP | V | X |
| | Wifi Setting (CAM1300/1311 Only) | V | X |
| Video & Audio Settings | Basic Settings | V | X |
| | Image Appearance Settings | V | X |
| | Video Streams | V | X |
| | Audio Settings | V | X |
| PTZ | RS-485 Settings/PTZ Settings | V | X |
| Recording | Recording Basic Settings | V | X |
| | Recorded File Management | V | X |
| Event Notification | Event Server | V | X |
| | Motion Detection | V | X |
| | Tampering Detection | V | X |
| | DI & DO | V | X |
| | Event Settings | V | X |
| System | MicroSD Card Management | V | X |
| | System Status | V | V |
| | System Log | V | X |
| | Firmware Upgrade | V | V |
| | Resetting to Factory Default Settings | V | X |

| | | | |
|---|---|---|---|
| | Export/Import | V | V |
| | Reboot | V | V |
| Camera Search | | X | V |
| Login | | V | V |
| Properties | | X | V |
| Delete from Tool | | X | V |
| Clearing and Setting Status | | X | V |
| Camera Group Actions | | X | V |
| Focus Tool | | X | V |

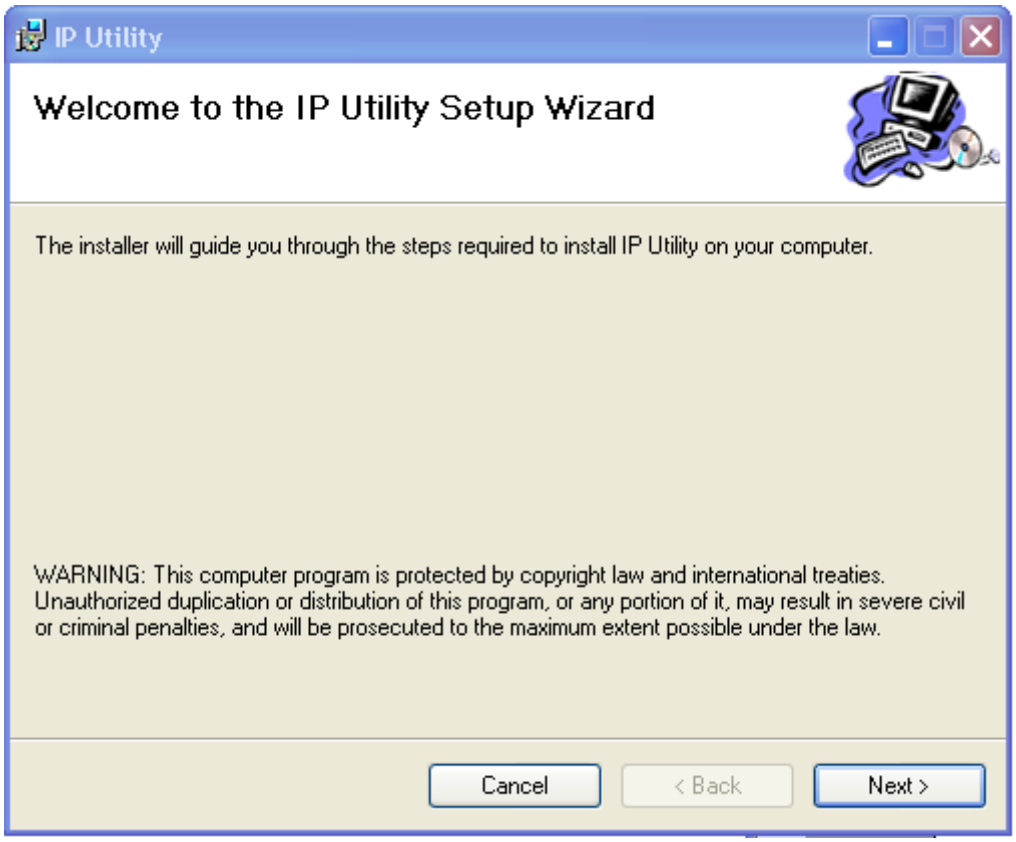
# 5.1. Overview

The IP Utility is a set of tools for network cameras. It includes tools to create, modify, delete and manage groups within the camera; The IP Camera Utility also provides tools to perform simple connectivity configuration, firmware upgrades and reboot operations. The utility is intended to simplify the configuration and management of multiple cameras.

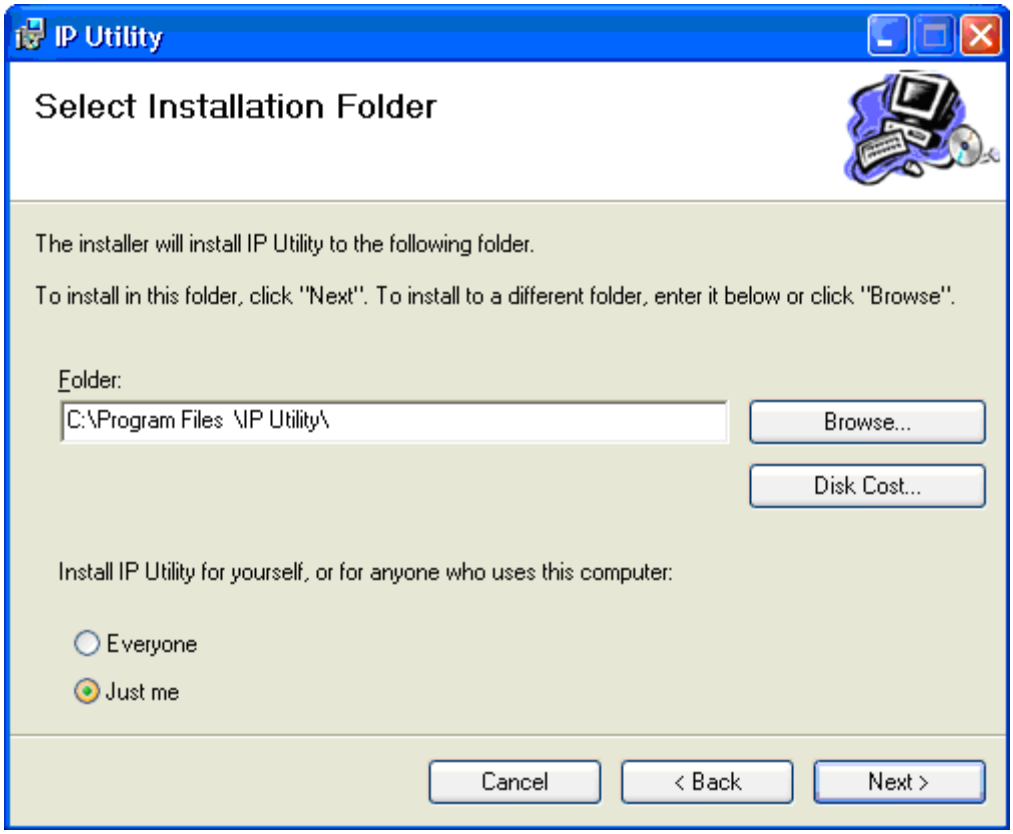
# 5.2. Installing the IP Utility

Install the IP Utility with the following steps:

1. Start SearchToolInstall.exe to begin the utility installation dialog:



2. Click **Next** to continue with installation.




3. Fill in the **Folder** field to specify the installation path. Clicking **Browse…** pulls up a file system browser. Clicking **Disk Cost** will display free space and the space the utility will take up on disks.

4. Choose if you wish to install the application for the current user only (**Just me**) or all users on this computer (**Everyone**).

5. Click **Next** to continue. The system will respond with a ready screen. Click **Next** again. The system will respond by displaying installation progress.

6. You may click **Cancel** at any time before finishing introduction, or **<Back** if it is available to cancel or jump back a step. Click **Close** when after installation is complete. The software is ready to use at this point.

# 5.3. IP Utility Basics

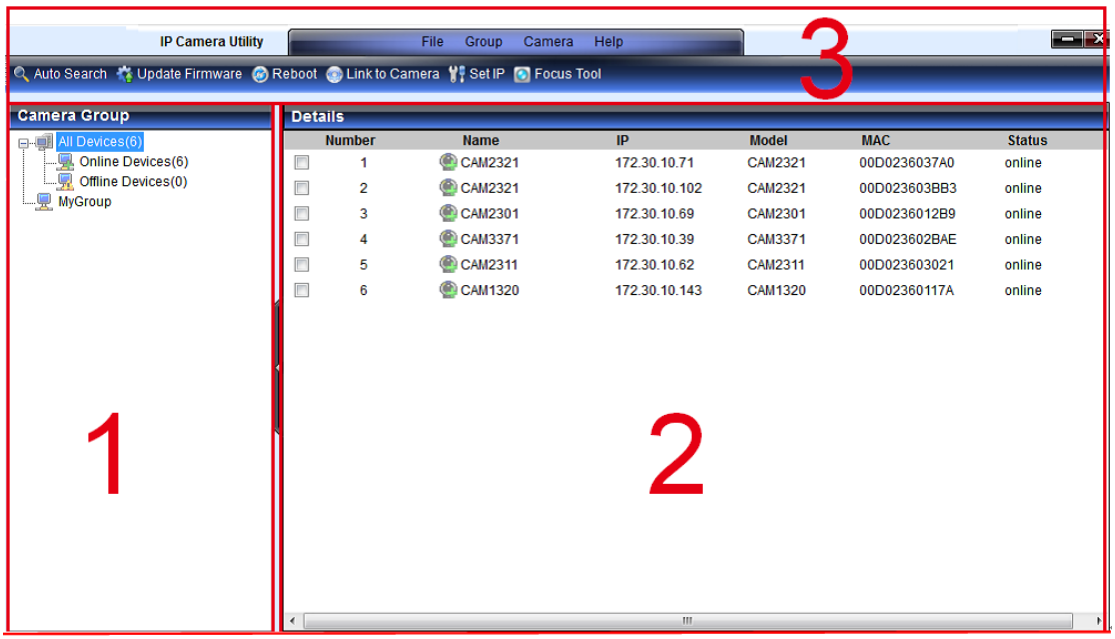
## Starting the IP Utility

To start the IP Utility, double-click the **IP Utility** shortcut on your desktop or go to **Start > Program Files > IP Utility> IP Utility.**

**Note:** On startup, the utility will automatically scan for IP Cameras on the same subnet as the computer. In some cases this may result in longer wait times.

## IP Utility Main Screen

The IP Utility main screen is divided into 3 sections:




1. **Camera Group Display** – displays group details
2. **Camera Detail Display** – displays camera details
3. **Function Buttons and Menus** – this section contains alternative access methods for functions that can be done within the Camera Group and Camera Detail Displays. This manual does not discuss this section separately.

## Exiting the IP Utility

To exit the IP utility, click the X button on the top right corner of the screen or choose **File > Exit** from the menu bar.

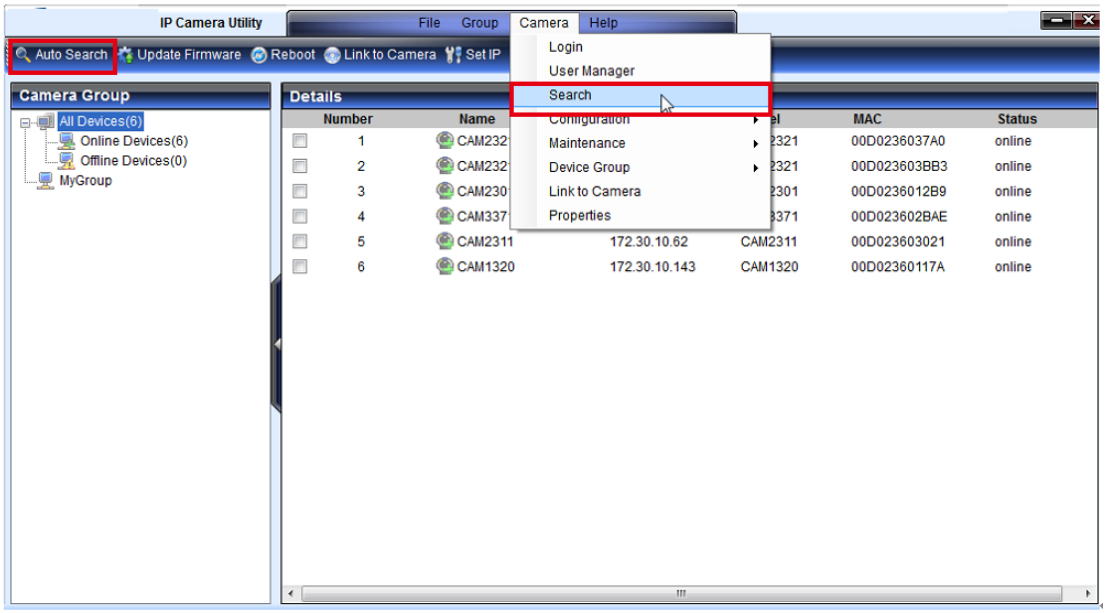
# 5.4. Camera Actions

This section displays camera information, including the IP, Name, Model, MAC Address, Status and Network Mask.

## Search

Search updates the details for the cameras listed, as well as locates any new cameras connected on the same subnet. The search is performed every time the IP utility starts. To perform search again:

1. Click the **Auto Search** button or click **Camera > Search** in the menus. The search will begin, and a status bar will display the search progress.

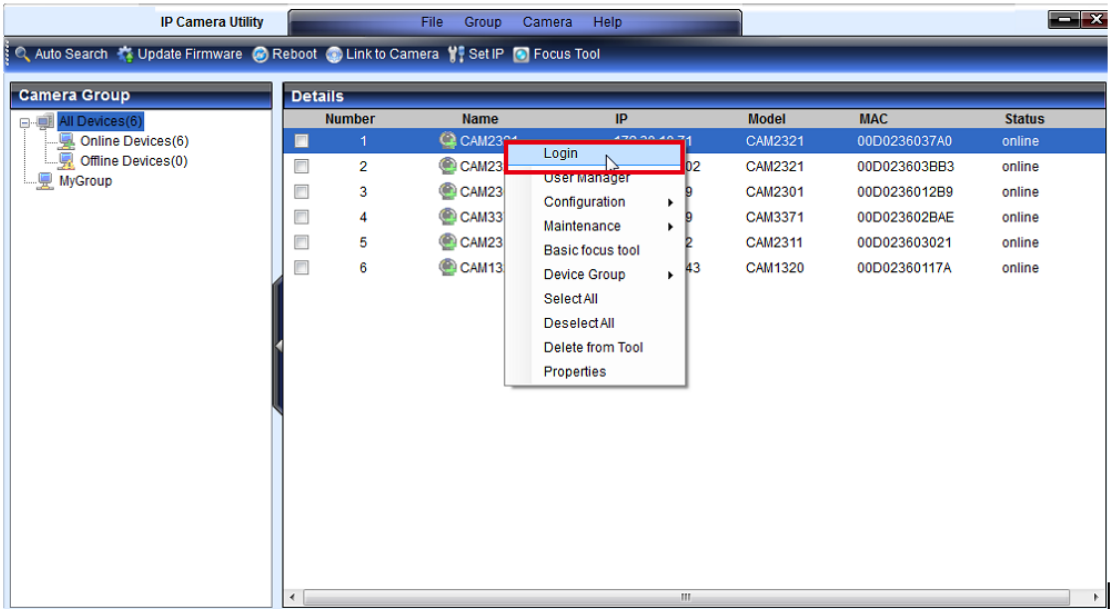


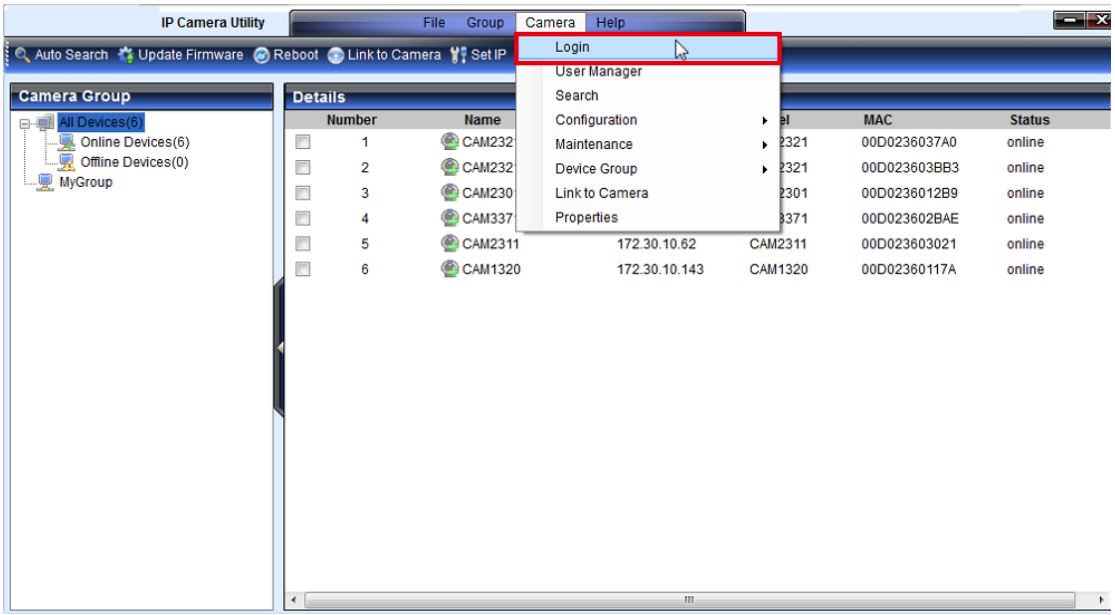

**Note:** The search may take up to 2 minutes, depending on your network configuration.

## Login

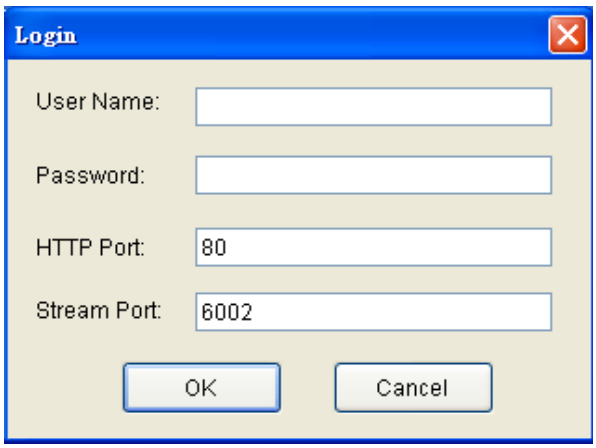
Before performing camera actions, most cameras require that proper login credentials are supplied. To login to a camera:

1. Right click the camera you wish to set. Select **Login** from the popup, the system responds with the *Login* window. Alternatively, click the camera entry and choose **Login** from the **Camera** menu.



2. Fill in the user name and password.



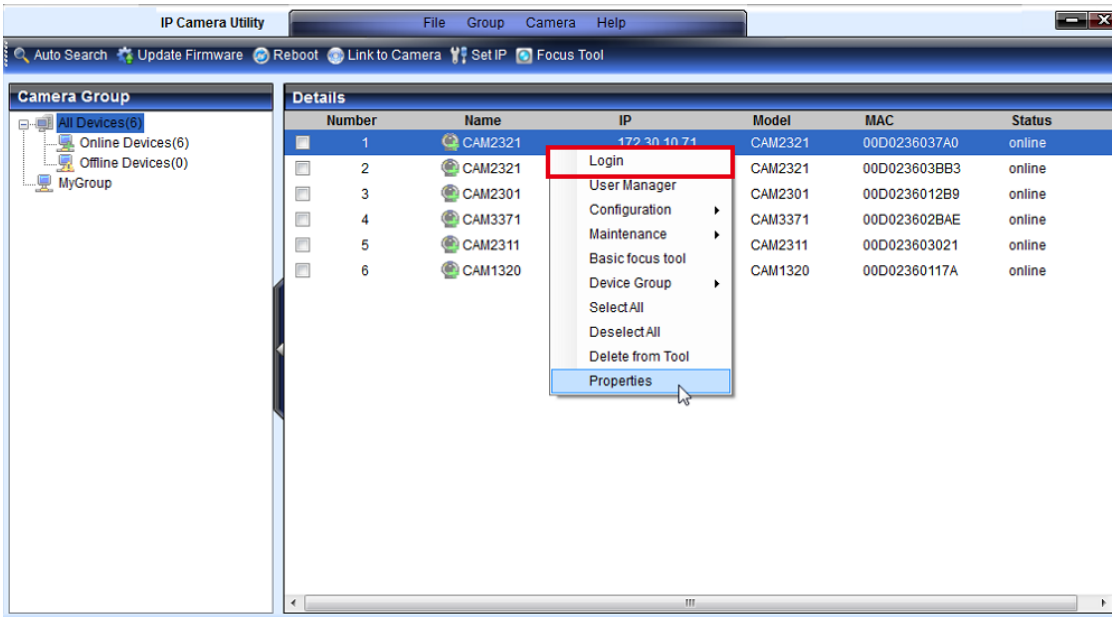

3. Click **OK** to set the username and password.

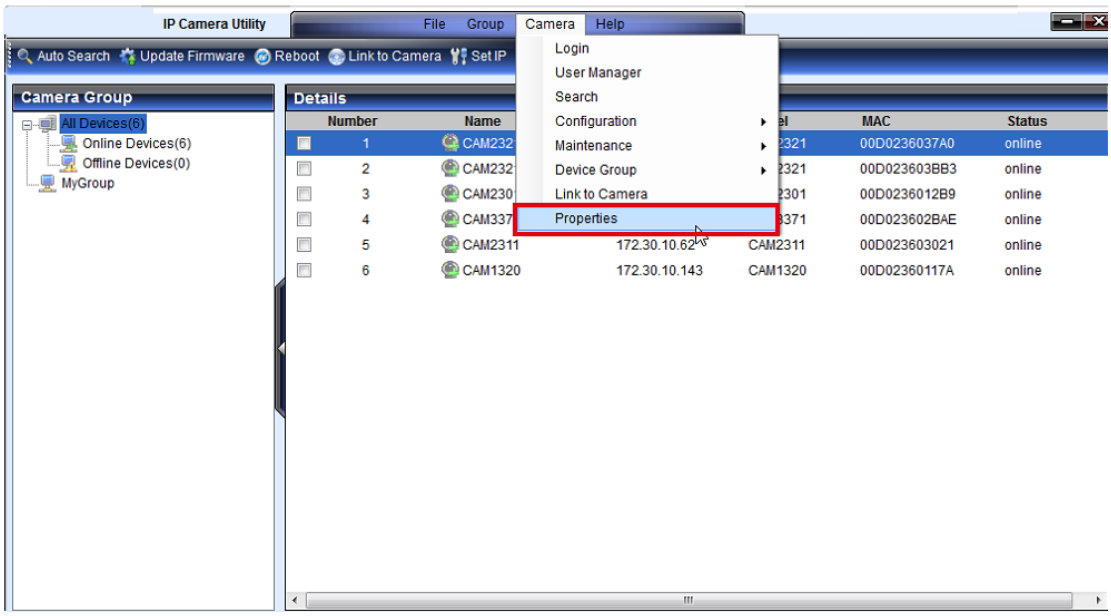
**Note:** To perform further configuration, please make sure that the User set here has administrator privileges. The default Username/Password for cameras is admin/admin.

## Properties

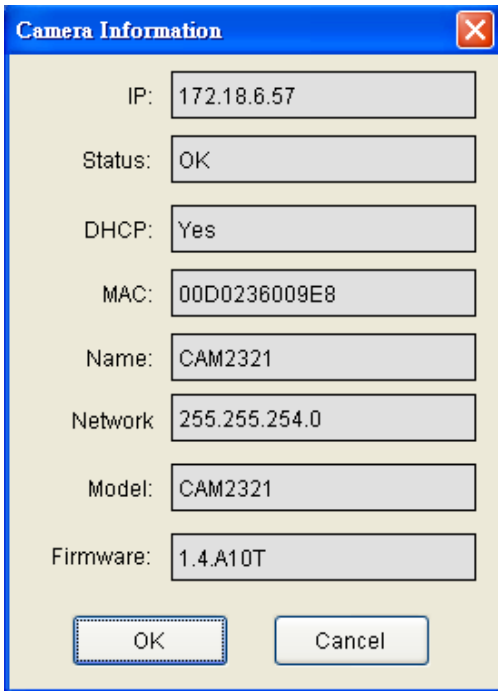
The properties of a camera can be viewed by following these steps:

1. Select a camera by checking the box in the first column of its listing.
2. Right click the camera and select **Properties**, or select **Camera > Properties** from the menu bar.



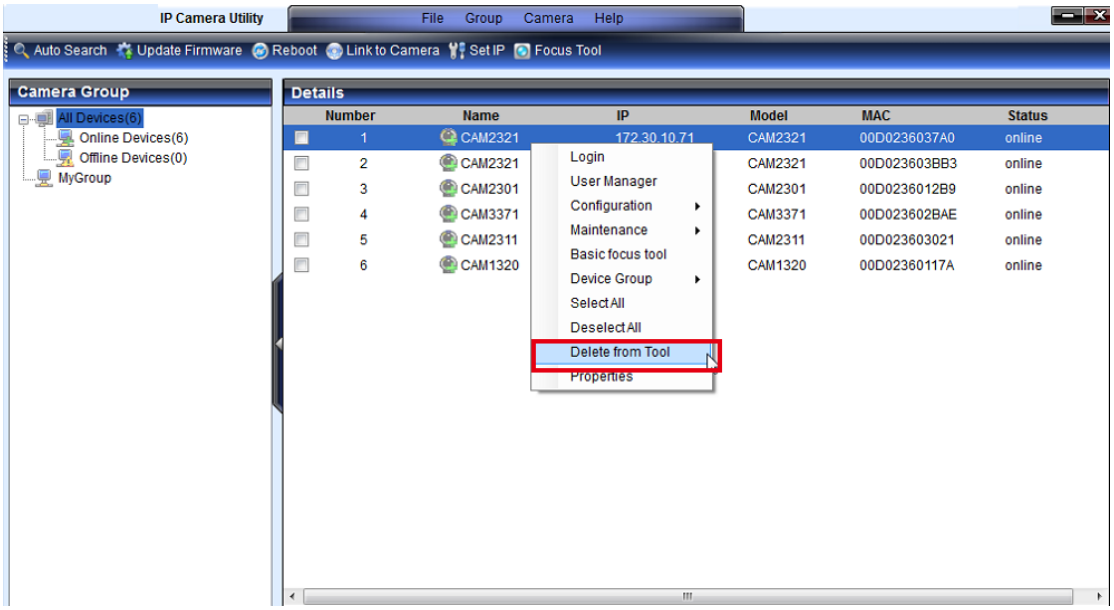



The *Camera Information* popup will display with camera details.



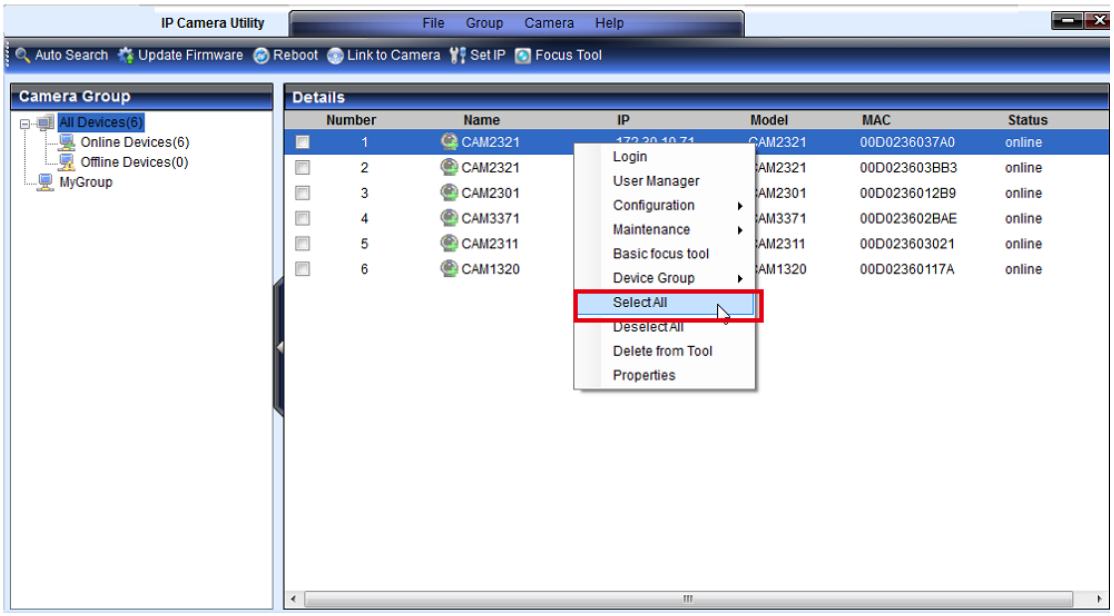
## Delete from Tool

1. Select one or more cameras by checking the box in the first column of their listing.
2. Right click the camera(s) which you want to delete from the tool and select **Delete from Tool.** The camera will be removed from the listings.



## Select All

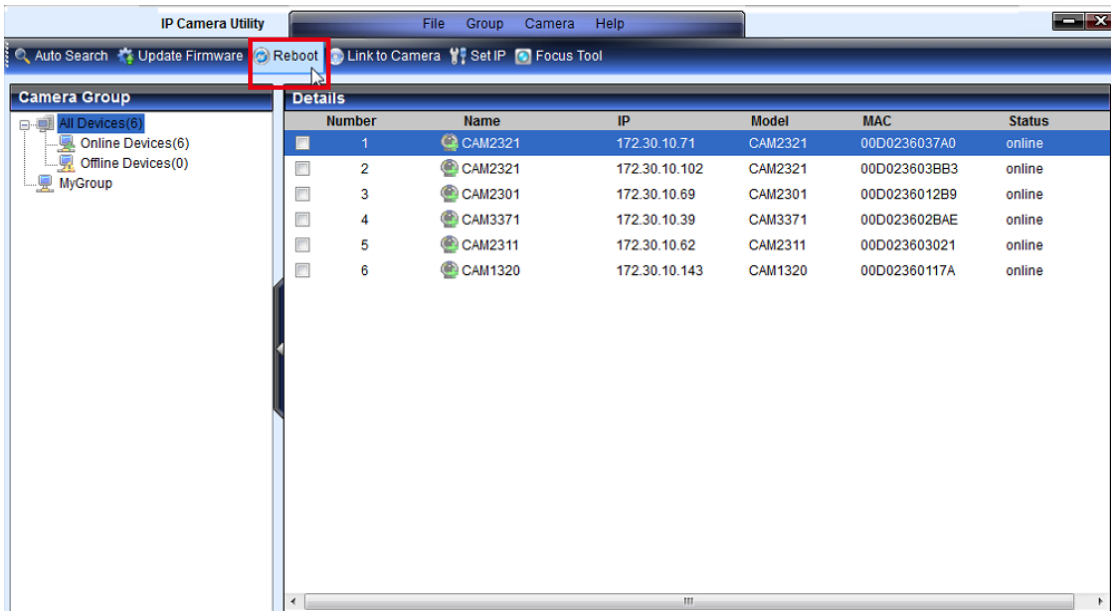
In a group context, right clicking a camera, and selecting **Select All** will select all the cameras in the group.

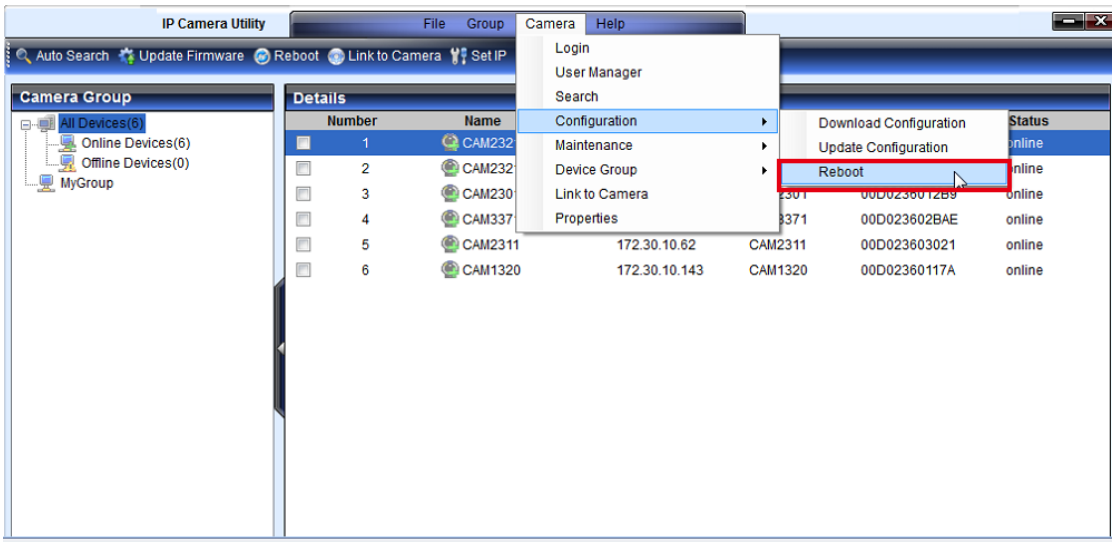


## Reboot Camera

In certain cases it may be necessary to reboot the camera. To do this:

1. Select a camera by checking the box in the first column of its listing.
2. Click the **Reboot** button or select **Camera > Configuration > Reboot** from the menu bar.



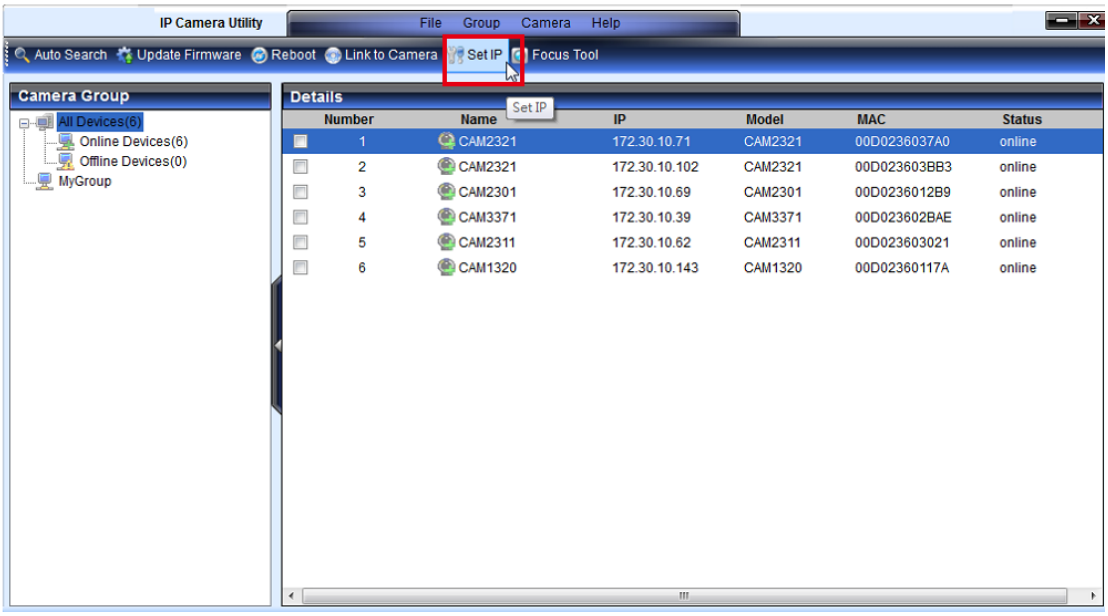




The camera will reboot. If further configuration is needed, perform the **Login** function again after the reboot is completed.

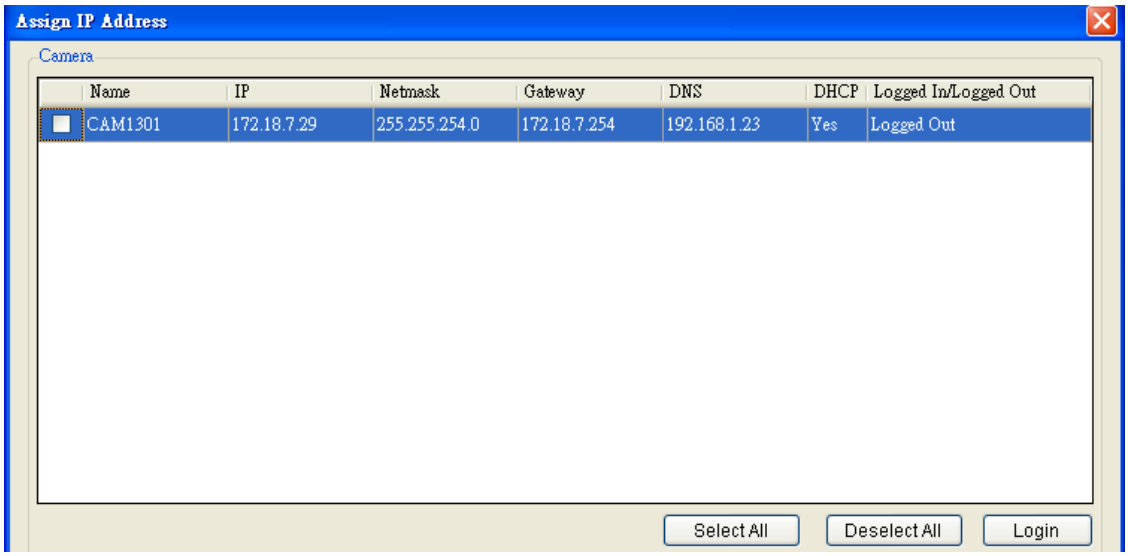
## Set IP

The IP Address of a camera can be set by following these steps:

1. Click the **Set IP** button.

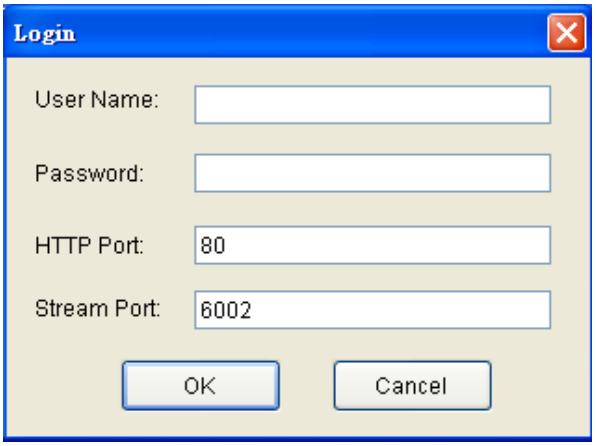



2. You can choose to obtain an IP address from DHCP or assign a fixed IP.




3. Select one or more cameras by checking the box in the first column of their listing. Click **Select All.**

4. A *Login* window will pop up. Fill in the user name and password. Click **OK**.

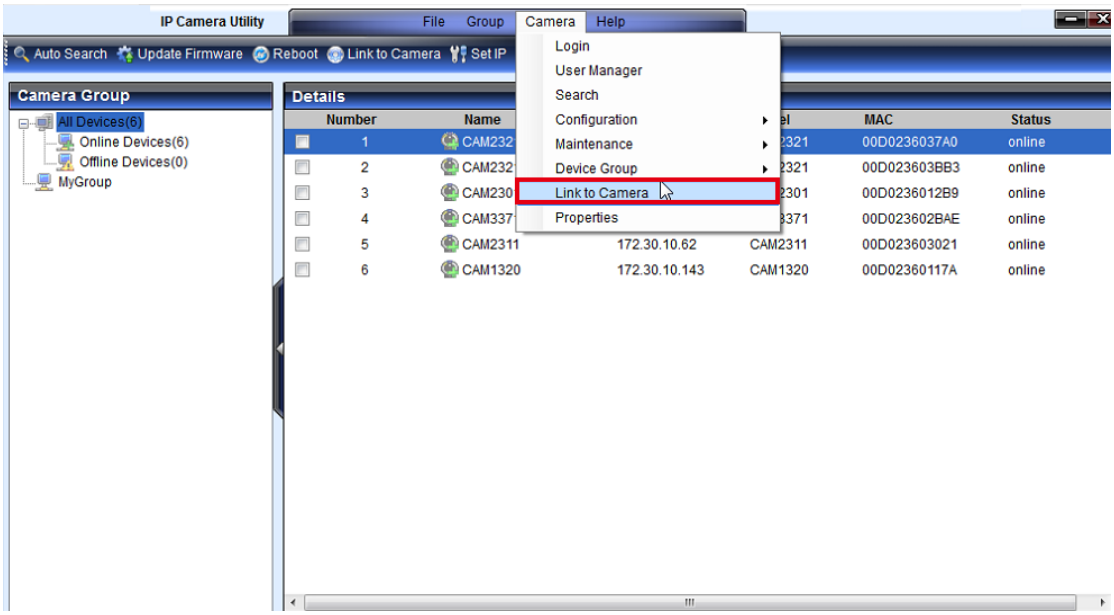



Click **OK** to save or **Cancel** to abort the changes before you leave the page.

# Link to Camera Web Interface

## Link to Camera

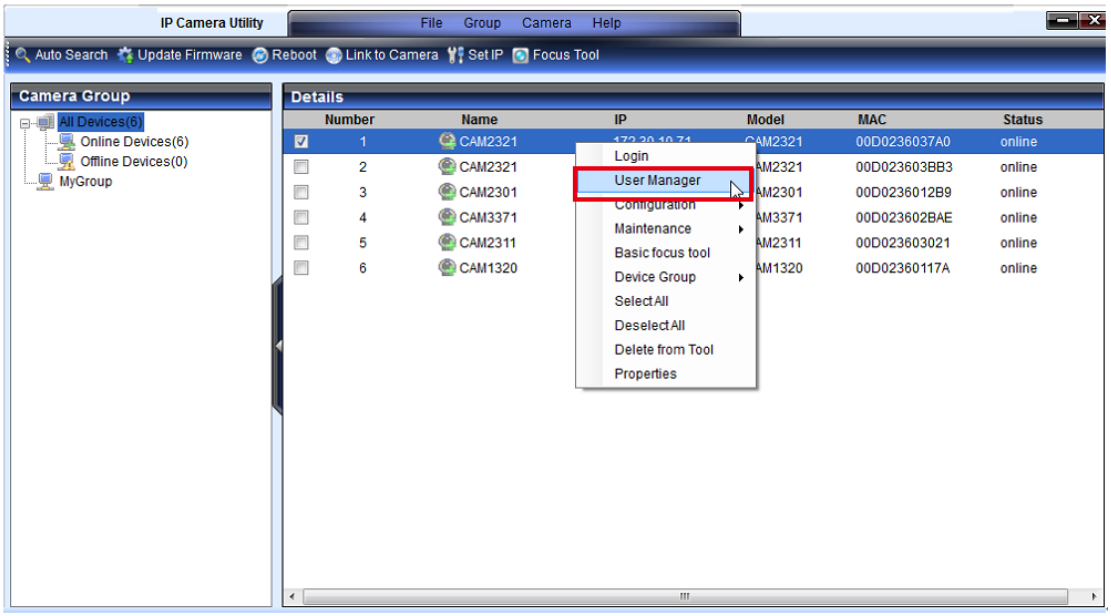
1. Select a camera by checking the box in the first column of its listing.
2. Double click the selected camera or select **Camera > Link to Camera** in the menu bar. The camera's live view webpage will open in a browser window.

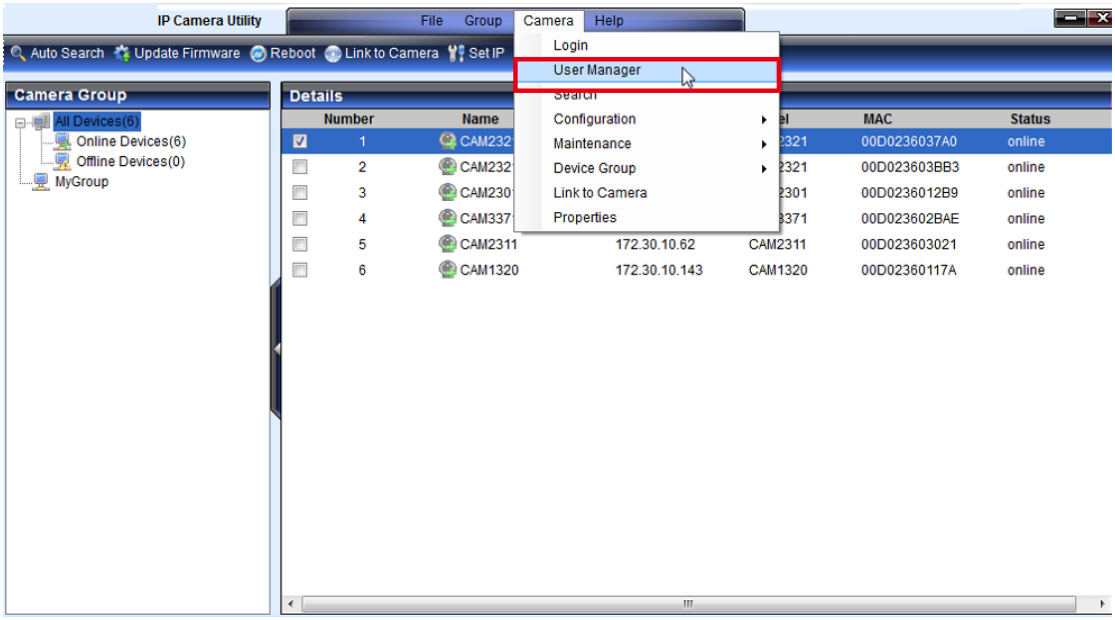


### Link to Camera User Manager

This function links to the user management page of the selected camera.

1. Select a camera by checking the box in the first column of its listing.
2. Right click the camera and select **User Manager** or click **Camera > User Manager** in the menu bar. The camera's user management webpage will open in a browser window.



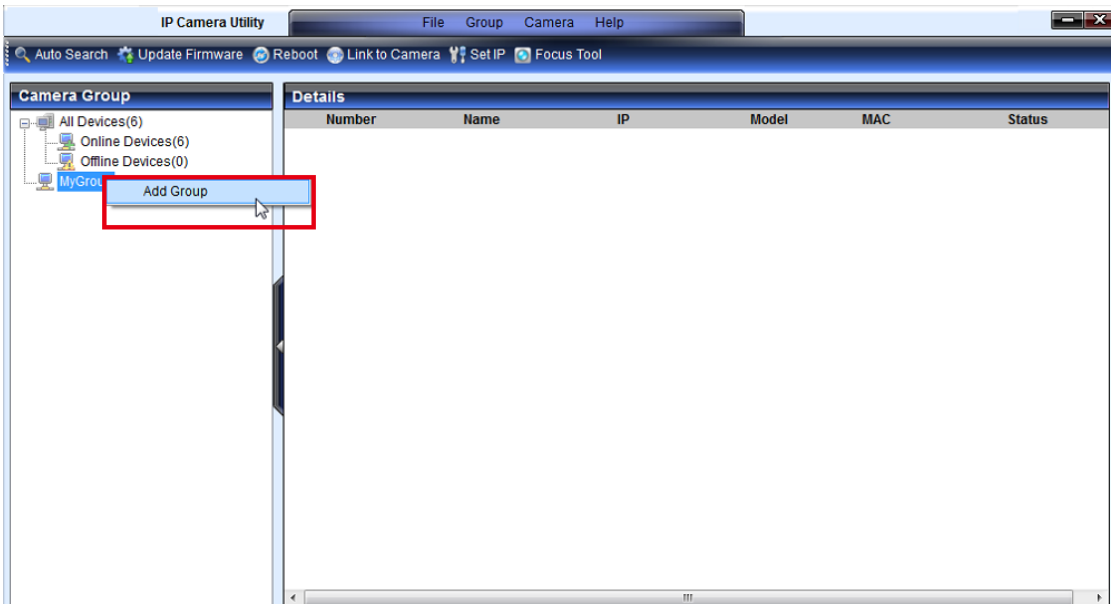
# 5.5. Camera Group Actions

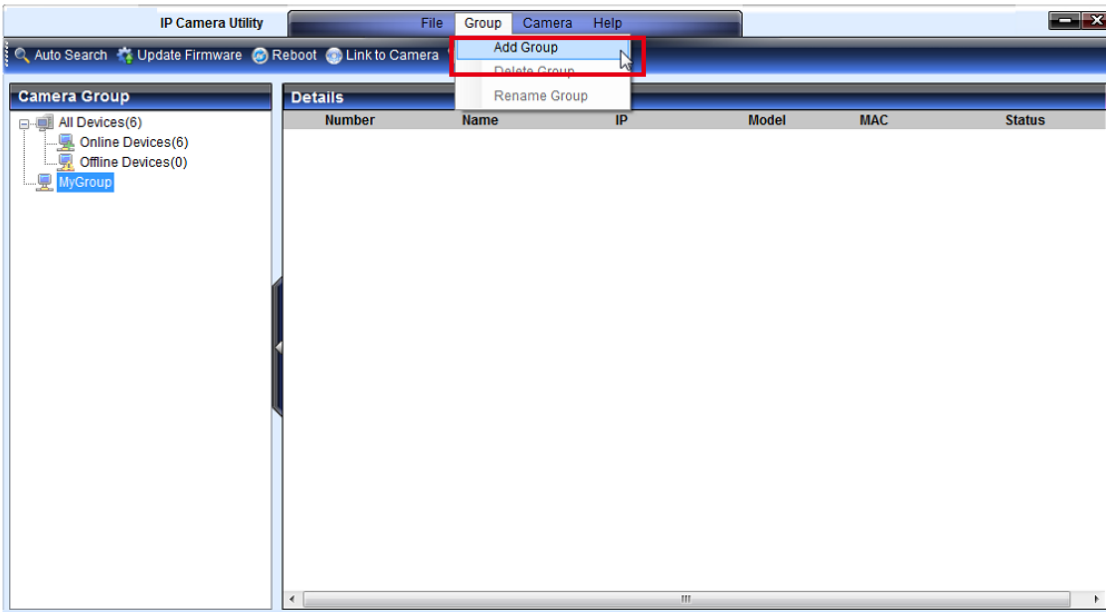
The *Camera Group* frame contains a simple tree containing group listings. There are two pre-defined subsections.

- **All Devices** - contains all the cameras in the tool, as well as predefined groups *New Devices* and *Warnings/Errors*
- **MyGroup** – contains only user defined groups.

## Add Group

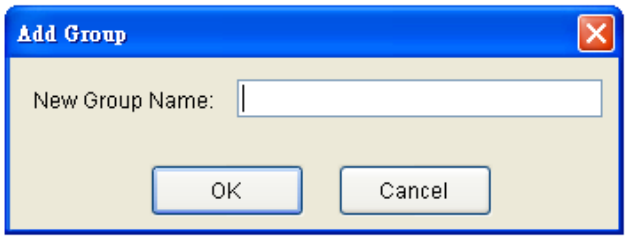
1. Right click the *MyGroup* root, and choose **Add Group** or choose **Add Group** from the **Group** menu.



The system responds with the *Add Group* popup.

2. In the *New Group Name* field, type in a group name.

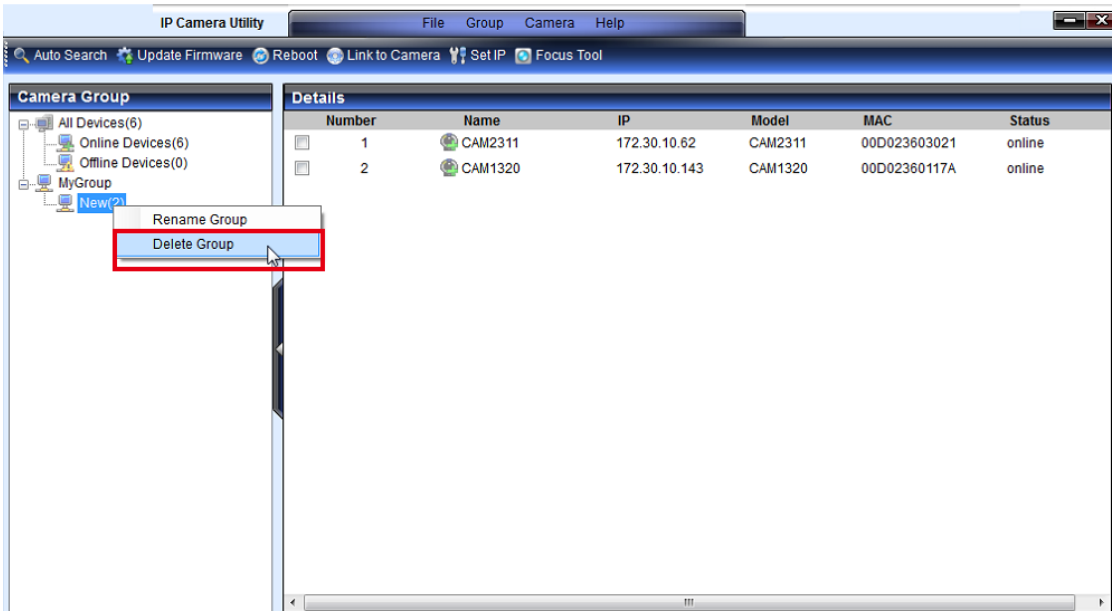


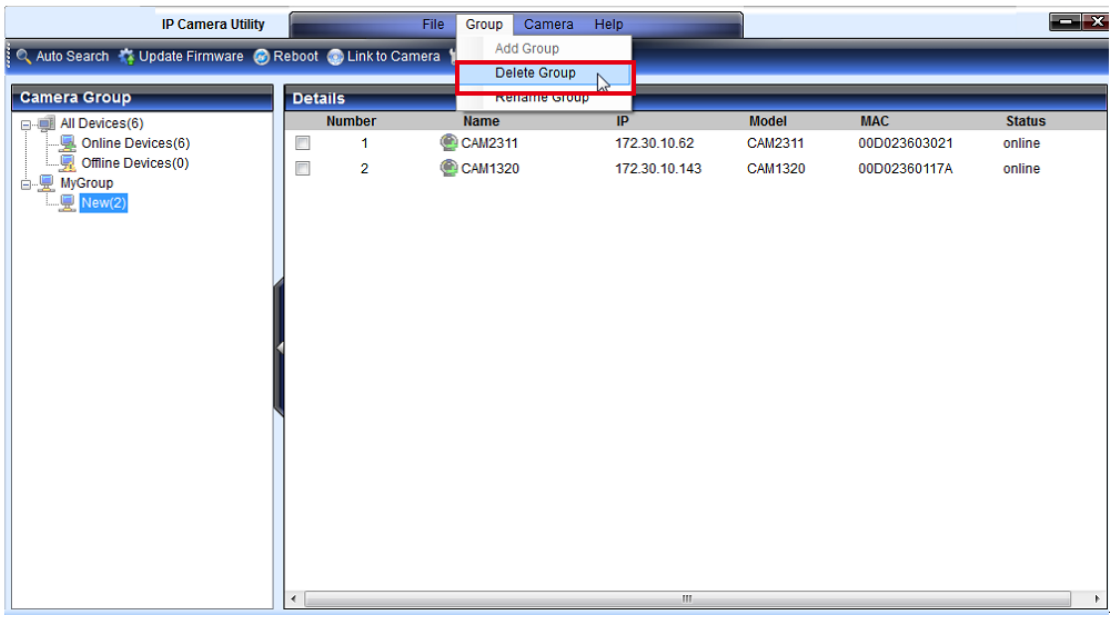

3. Click **OK** to add the group. The group will appear under *MyGroup*

**Note:** Camera group names can contain upper and lower-case letters, numerals and the _ symbol. Cameras can belong to more than one group.

## Delete Group

1. Expand *MyGroup* and right-click the group you wish to delete.
2. Choose **Delete Group** to delete the group. Alternatively, click the group and choose **Delete Group** from the **Group** menu.



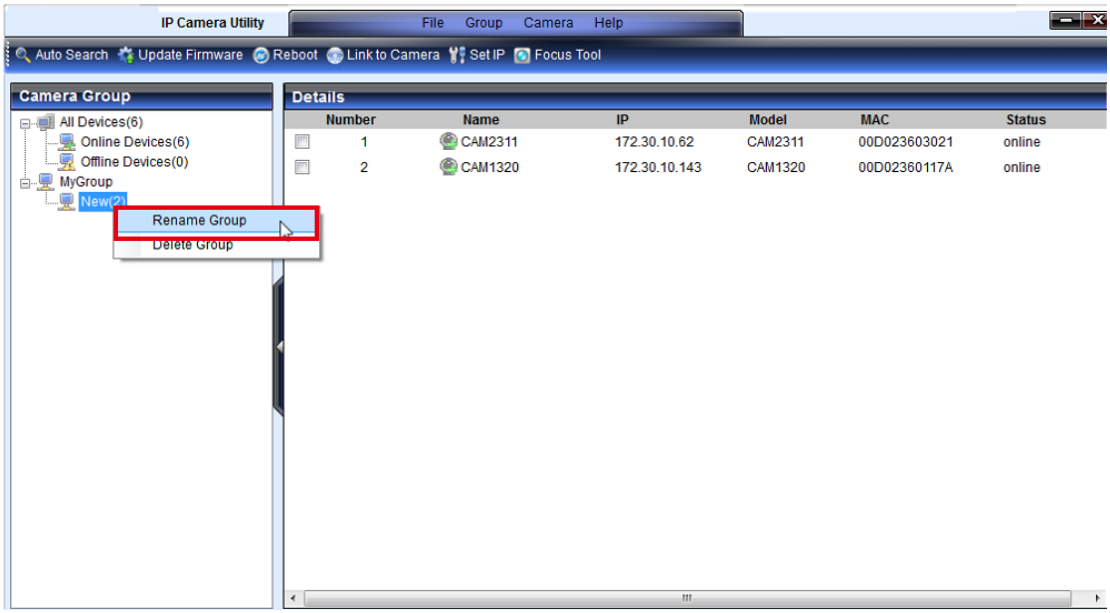



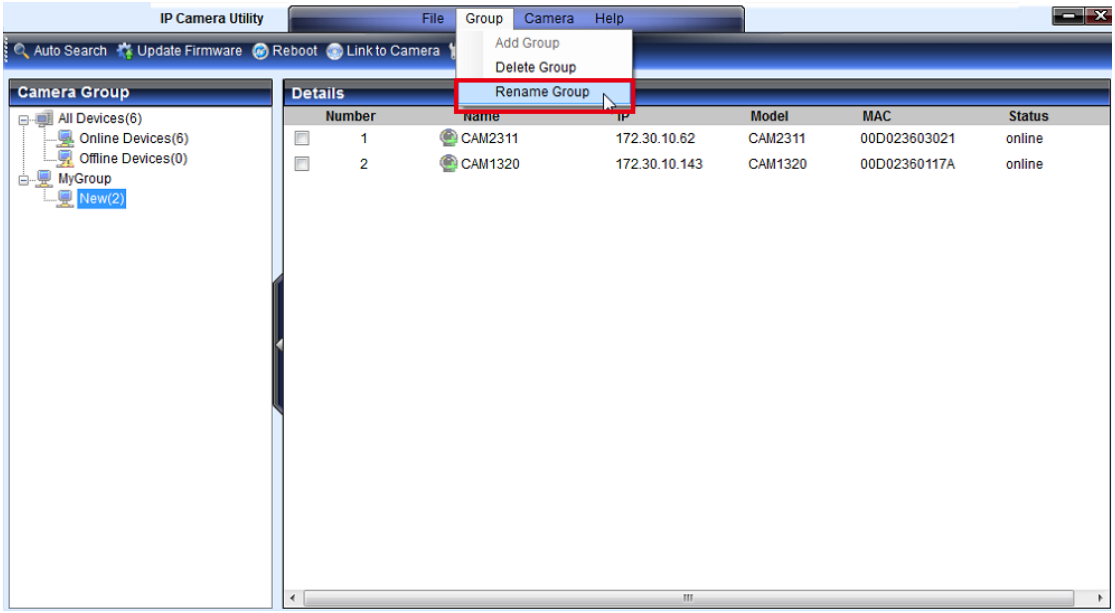

3. The system will ask to confirm the deletion. Click **Yes** to delete the group.

**Note:** Groups may be deleted, even if they contain cameras.

## Rename Group

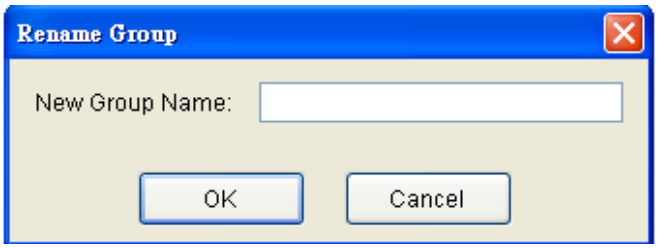
1. Expand *MyGroup* and right-click the group you wish to rename.
2. Choose **Rename Group**. Alternatively, click the group and choose **Rename Group** from the **Group** menu.




The *Rename Group* popup appears.

3. Enter a new group name in the *New Group Name* field.



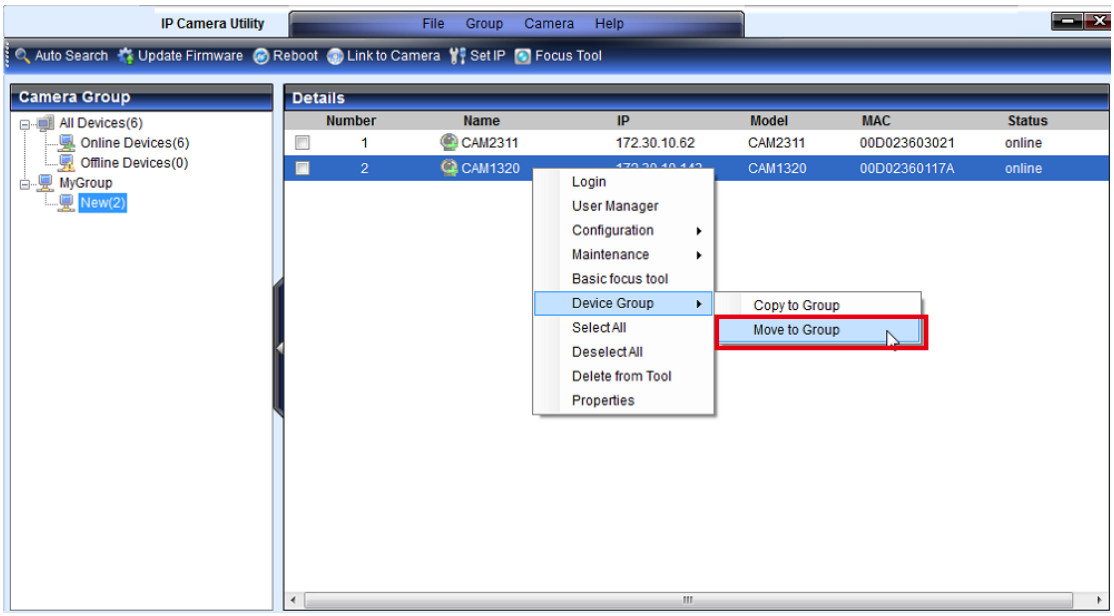

4. Click **OK** to save your changes.

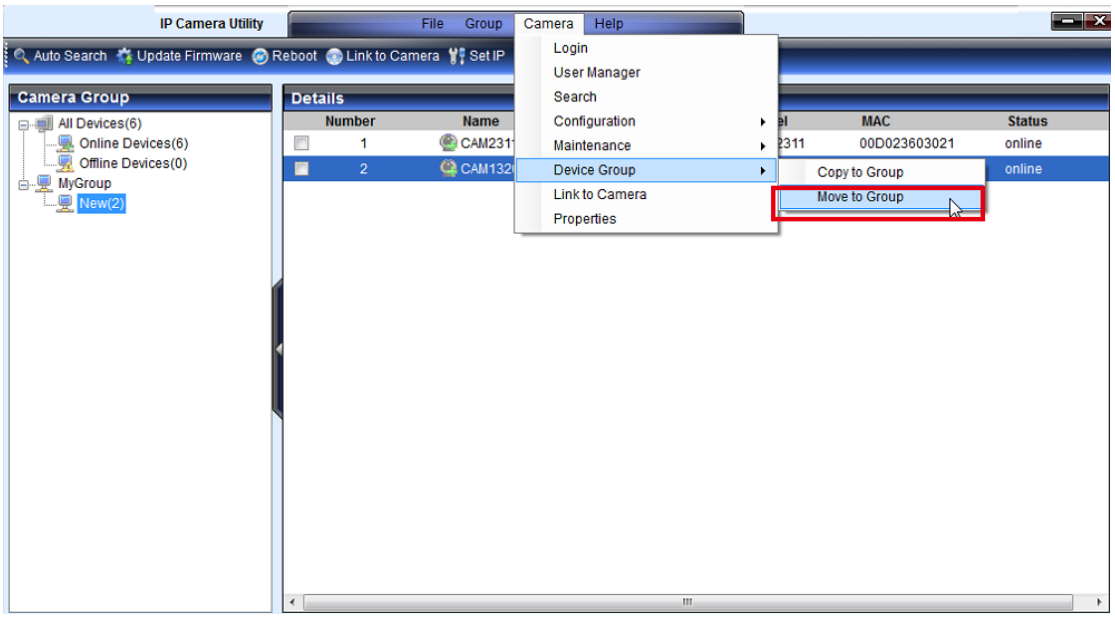
**Note:** Camera group names can contain upper and lower-case letters, numerals and the _ symbol.

## Move to Group

This function moves the selected camera(s) from a group to another group.

1. From the *Camera Group* window select a group under *MyGroup*.
2. Select one or more cameras from the existing group by checking the box in the first column of their listing.
3. Right click the camera and select **Device Group > Move to Group**, or select **Camera > Device Group > Move to Group** from the menu bar.



4. In the *Select Group* pop-up box select the destination group.

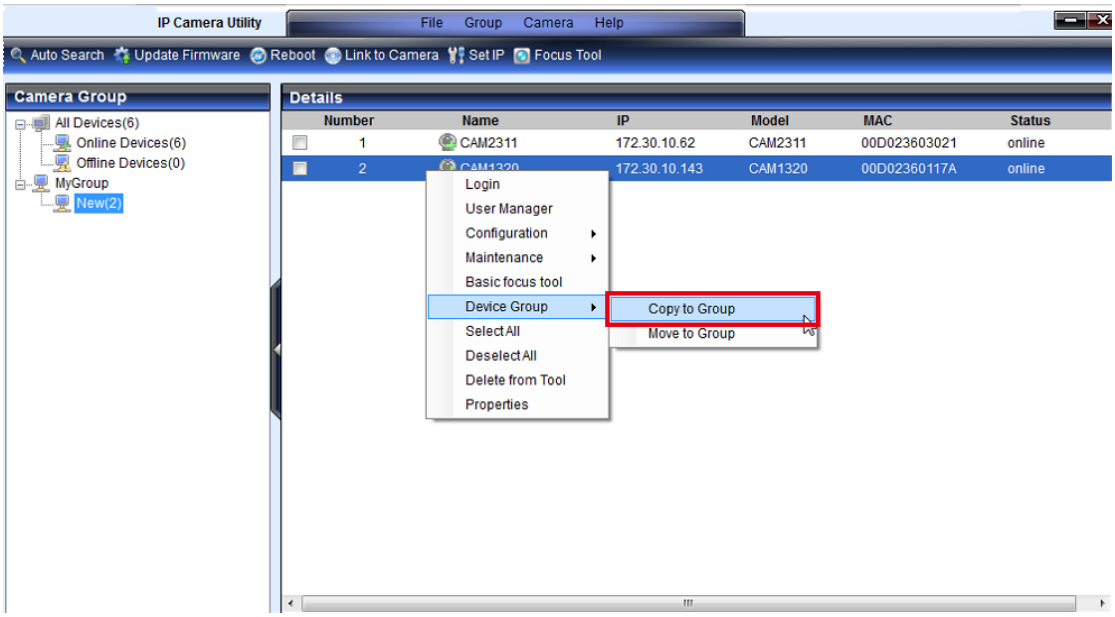
5. Click **OK** to move the selected camera(s) to the group.

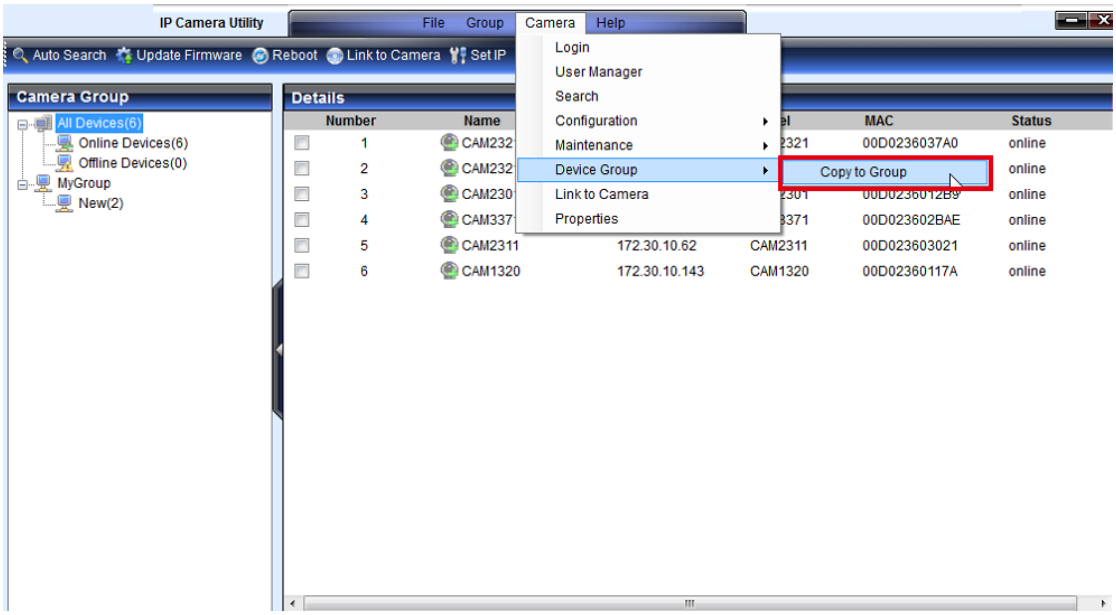
**Note:** Cameras can not be moved from groups under *All Devices*.

## Copy to Group

This function copies the selected camera(s) from a group to another group.

1. From the *Device Group* window select a group.
2. Select one or more cameras from the existing group by checking the box in the first column of their listing.
3. Right-click the camera(s) and select **Device Group > Copy to Group**, or select **Camera > Device Group > Copy to Group** from the menu bar.



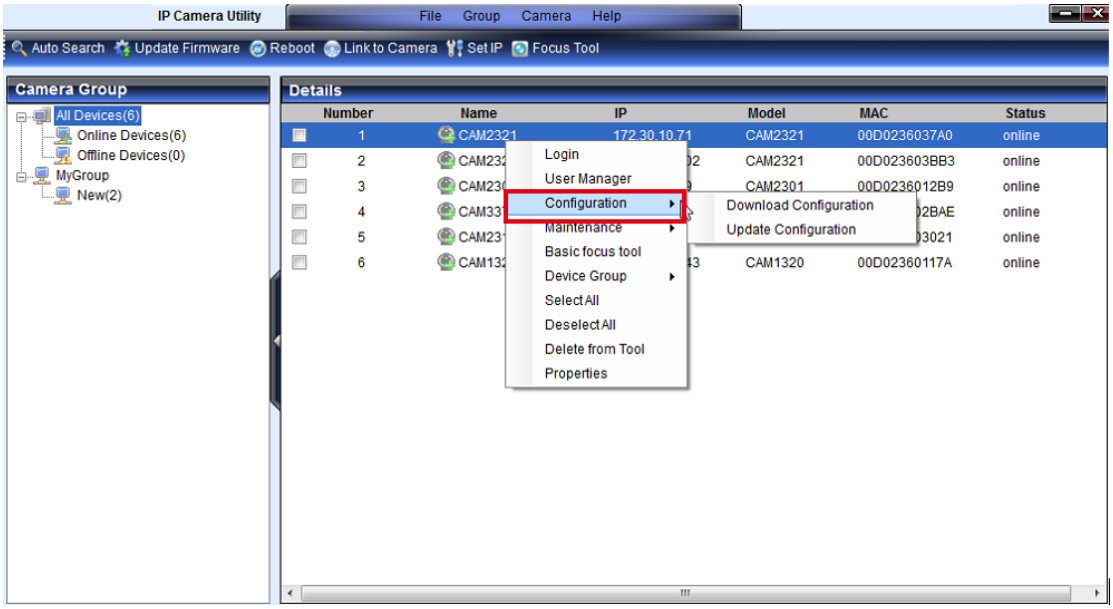



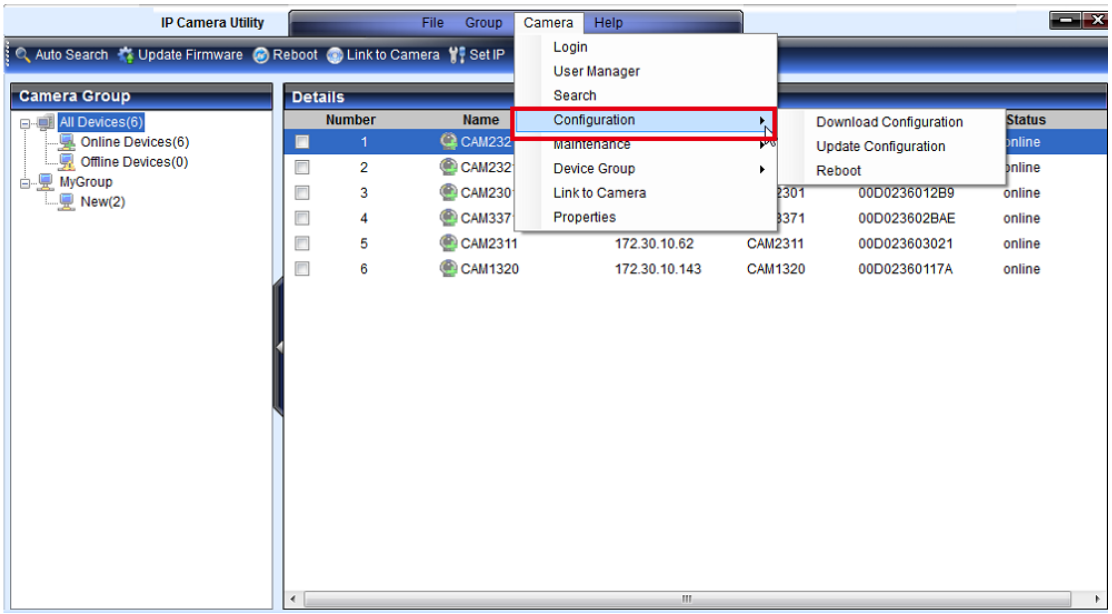
4. In the *Select Group* pop-up box select the destination group.

5. Click **OK** to copy the selected camera(s) to the group.

# 5.6. Configuration Settings

Configuration can be downloaded and updated by selecting **Camera > Configuration**, or the process can be automated by downloading the configuration from one camera using the **Download Configuration** function, and then using the **Update Configuration** function to upload the changed configuration file.

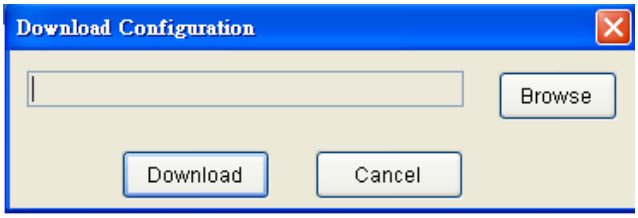


## Download Configuration

This function downloads a configuration file.

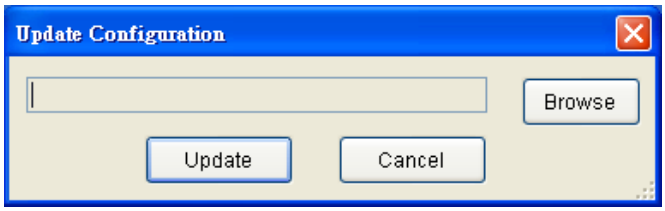
1. Select a camera by checking the box in the first column of its listing.
2. Right-click the camera which you want to download from and select **Configuration > Download Configuration**, or select **Camera > Configuration > Download Configuration** from the menu bar. The *Download Configuration* popup will display.




3. Click the **Browse** button to browse the computer and locate a destination.
4. Click **Download** to download the configuration file to the destination.

## Update Configuration

1. Select one or more cameras by checking the box in the first column of their listing.
2. Right-click the camera(s) which you want to update to and select **Configuration > Update Configuration**, or select **Camera > Configuration > Update Configuration** from the menu bar. The *Update Configuration* popup will display.

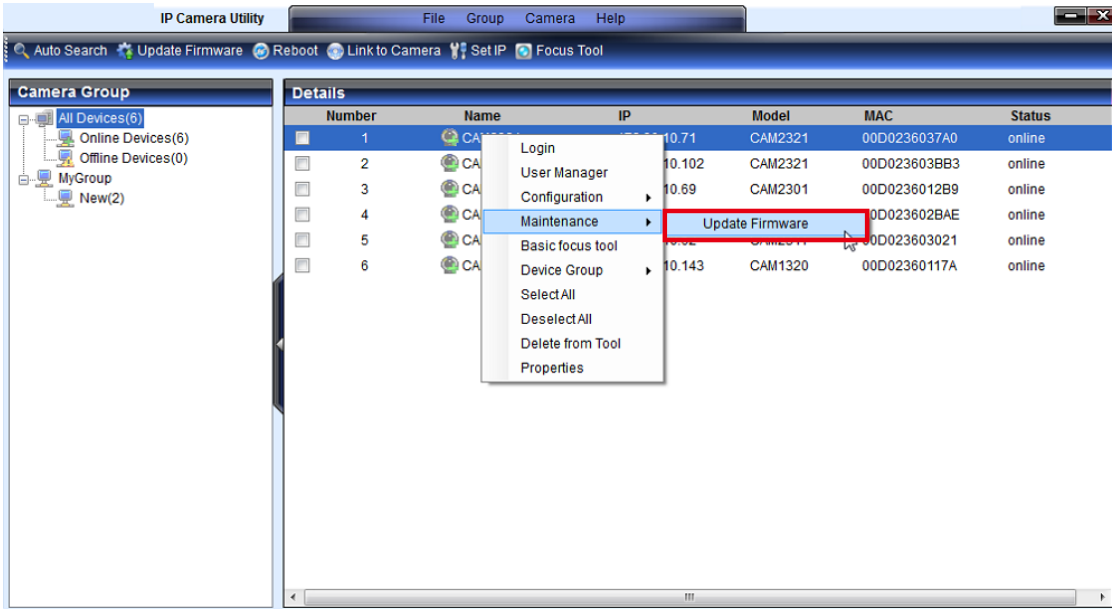


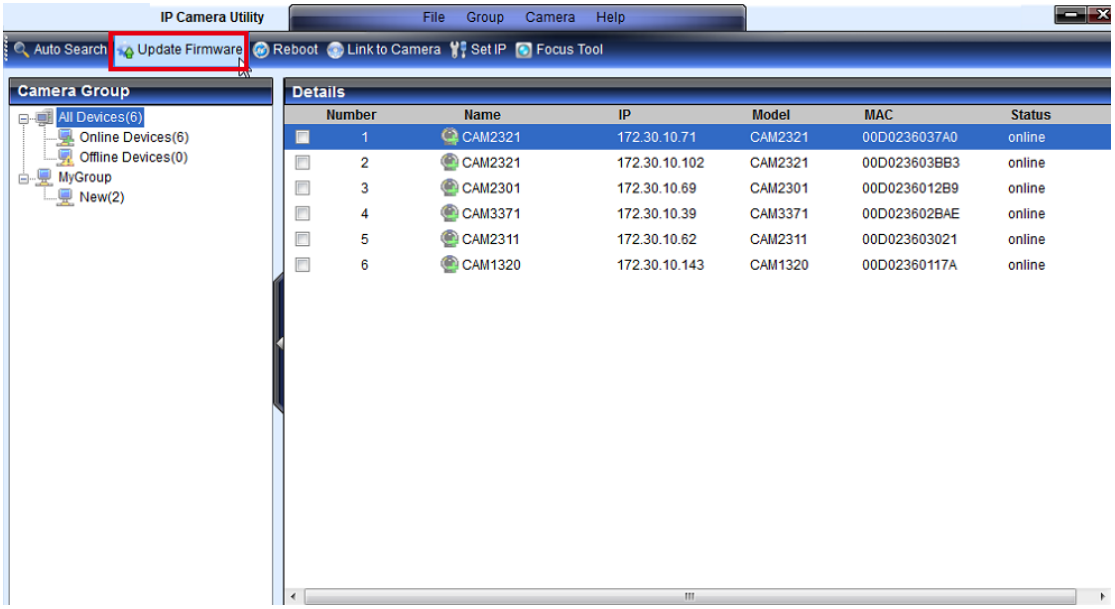

3. Click the **Browse** button to browse the computer and locate a configuration file.
4. Click **Update** to upload the configuration file to the camera(s).

# 5.7. Firmware Actions

## Update Firmware

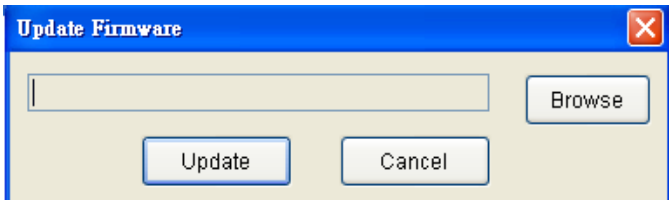
Once a new version of the camera firmware is obtained, the firmware can be updated using the following steps:




**Note:** You must be logged into the camera to update the camera firmware.

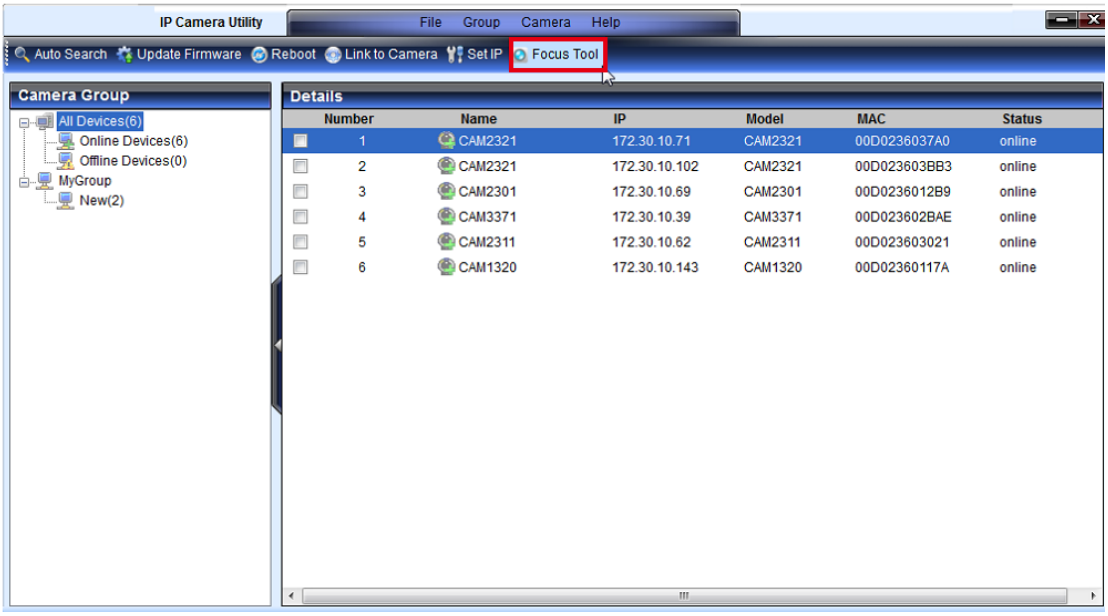
1. Select one or more cameras by checking the box in the first column of their listing.
2. Click the **Update Firmware** button; right-click the camera(s) which you want to update to and select **Maintenance > Update Firmware**; or select **Camera > Maintenance > Update Firmware** from the menu bar. The *Update Firmware* popup will display.



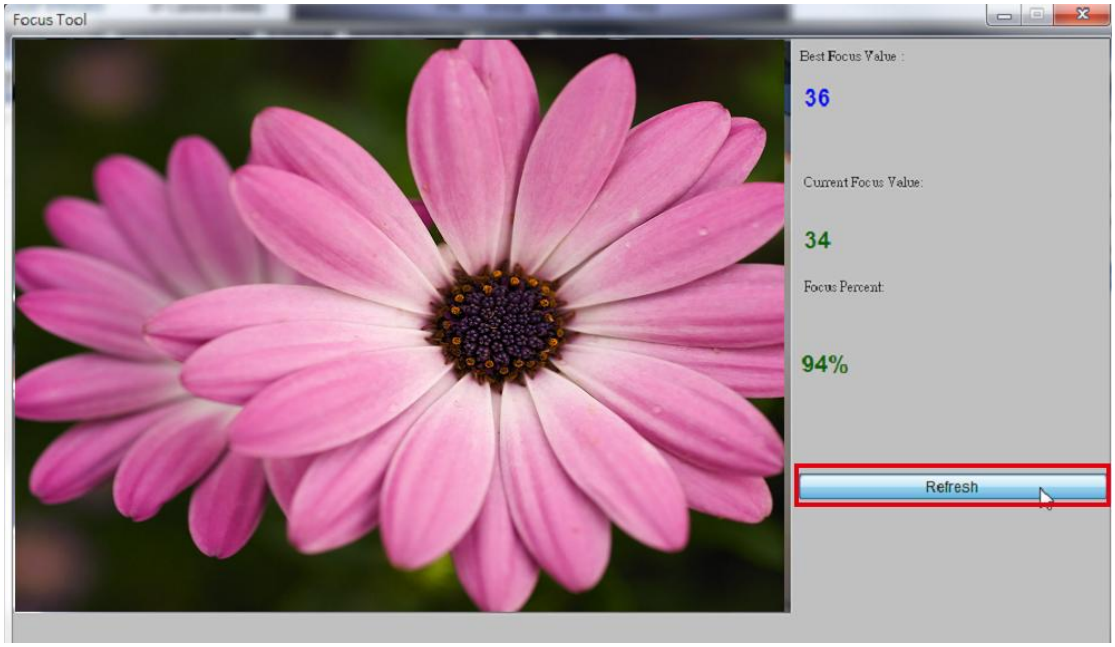

3. Click the **Browse** button to browse the file system and locate a firmware file.
4. Click **Update** to upload the firmware to the camera(s).

# 5.8. Focus Tool

The Focus Tool is used as a reference for focus precision. Click the **Focus Tool** button to open it.




Information of *Best Focus Value*, *Current Focus Value* and *Focus Percent* will be shown at the bottom of the Focus Tool Window. You can click **Refresh** to get a new data after focus adjustment is done.




**Note:** When the Focus Percent is higher, the focus is more precise.